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INSTRUCTIONS FOR 4-FT. WADING

CRUSADER III, AA III

This publication has been prepared to the instructions of
THE CHIEF INSPECTOR OF FIGHTING VEHICLES
to whom all communications should be addressed

COMPILED AND PUBLISHED BY
THE NUFFIELD ORGANIZATION

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FIRST EDITION

These instructions, whilst issued for 4 ft. wading, are to be interpreted as follows :—

VEHICLE WILL BE CAPABLE OF A 4 FT. WADE STRAIGHT FROM CRAFT TO SHORE

or

VEHICLE WILL BE CAPABLE OF WADING FOR A PERIOD OF SIX MINUTES IN WATER UP TO 3 FT. DEEP.

In either case spray from waves will be encountered ; these instructions allow for such conditions with 1 ft. 6 in. waves in addition to the depths specified above.

FOREWORD

The instructions enumerated in this book, carefully followed and worked to in every detail, ensure that the Crusader III, AAIII, can be successfully waded to a depth of 4 ft.

The various operations described are designed to be carried out by the vehicle crew except in the case of Task 44, when the L.A.D. or Squadron fitters will be required.

It is absolutely essential that a vehicle intended for wading should be mechanically sound, otherwise the chances of carrying out a successful operation will be seriously impaired. It is therefore assumed in the following pages that the vehicle treated is in first-class order.

Even then certain extra maintenance is required, as described in "MAINTENANCE BEFORE SEALING."

Sealing instructions are divided into stages, commencing with "WORK CARRIED OUT IN THE FIELD." Each task therein must be completed in the sequence given. There is one chance to seal, only one, therefore follow the instructions implicitly and seal efficiently, and above all do not attempt any experiments.

PROPER SUPERVISION IS VITAL

An officer must be detailed to supervise sealing and be responsible for passing work as satisfactory.

An N.C.O. must be detailed to oversee the sealing of the Squadron Commander's vehicle and so allow the Squadron Commander to carry out the supervision.

Faults to look for are listed under "SEALING MATERIALS AND HOW TO USE THEM."

NOTE : One gallon of petrol per vehicle will be required for cleaning purposes.

NOTE : Before commencing work, park the vehicle so that there is a 6 ft. working space on both sides of each vehicle and sufficient room fore and aft.

Approximate man hours required for work called for at Stages 1, 2 and 3

Stage	1	Crew	...	...	178	man hours
		Fitters	...	...	2	„ „
„	2	Crew	...	...	26	„ „
„	3	Crew	...	...	4	„ „

(I.F.V.)

FIRST EDITION

MARCH, 1944

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SEALING MATERIALS AND HOW TO USE THEM

VITALLY IMPORTANT

The officer responsible for passing work as satisfactory must at the outset inspect the sites where it is proposed to clean and seal vehicles. Vehicles must be parked in hard dry ground. Mud and water will spoil adhesion of the sealing compounds just as completely as will grease and oil.

CLEANLINESS is the first essential of successful sealing. Whenever cleaning and sealing work is to be done in wet weather, efficient covers must be arranged over vehicles.

CLEANING MATERIALS

Scraper or wire brush for removing caked mud, loose paint, etc., that water will not remove.

Clean rag or cotton waste for wiping down after washing, or with petrol or Bostik cleaner.

Petrol is used (sparingly) for preliminary cleaning of oily surfaces ; after using petrol, finish off with Bostik cleaner.

Petrol must not be used on any of the Bostik compounds as it will destroy the sealing.

Bostik cleaner for final cleaning of surfaces before applying a sealing compound and for cleaning joints already sealed when a repair is necessary. Apply sparingly.

Do not use petrol or Bostik cleaner as a thinner for any of the sealing materials.

SEALING MATERIALS

BEFORE USING ANY OF THE SEALING MATERIALS, REMEMBER THE PREPARED SURFACE MUST BE DRY AS WELL AS CLEAN.

Bostik C. is an adhesive compound supplied in tins. It should be applied with a brush, and must fully cover the surface on which it is being painted. It is used as an adhesive for jointing fabric to metal or fabric to fabric. Bostik C. is painted on both the surfaces to be stuck together and must be allowed to get tacky before making the joint. The time required for drying is dependent on the weather conditions. **Replace the lid on the tin immediately after use.**

Bostik AA. is a sealing cement supplied in green tins for easy identification. It is normally applied with a brush to a surface prepared by cleaning with Bostik cleaner. Bostik AA. is used for sealing rivet or bolt heads, and close fitting seams, or on top of fabric, or W.D. Pressure Plastic (when painting it on fabric or Pressure Plastic omit the use of Bostik cleaner). **Replace the lid on the tin immediately after use.**

IMPORTANT. To apply Bostik C. or AA., brush it on with what can best be described as a " stippling " motion. Get plenty of the compound on the brush, and work it into the surface until there is a good covering of compound. **Bostik AA. must be worked right into seams. Do not just draw the brush straight along a seam, or merely dab on the compound.** Bostik C. and AA. must be made easily workable by stirring thoroughly before use. If stirring alone is not enough, warm the compound by standing the tin in hot water. **Do not get any water into the tin.**

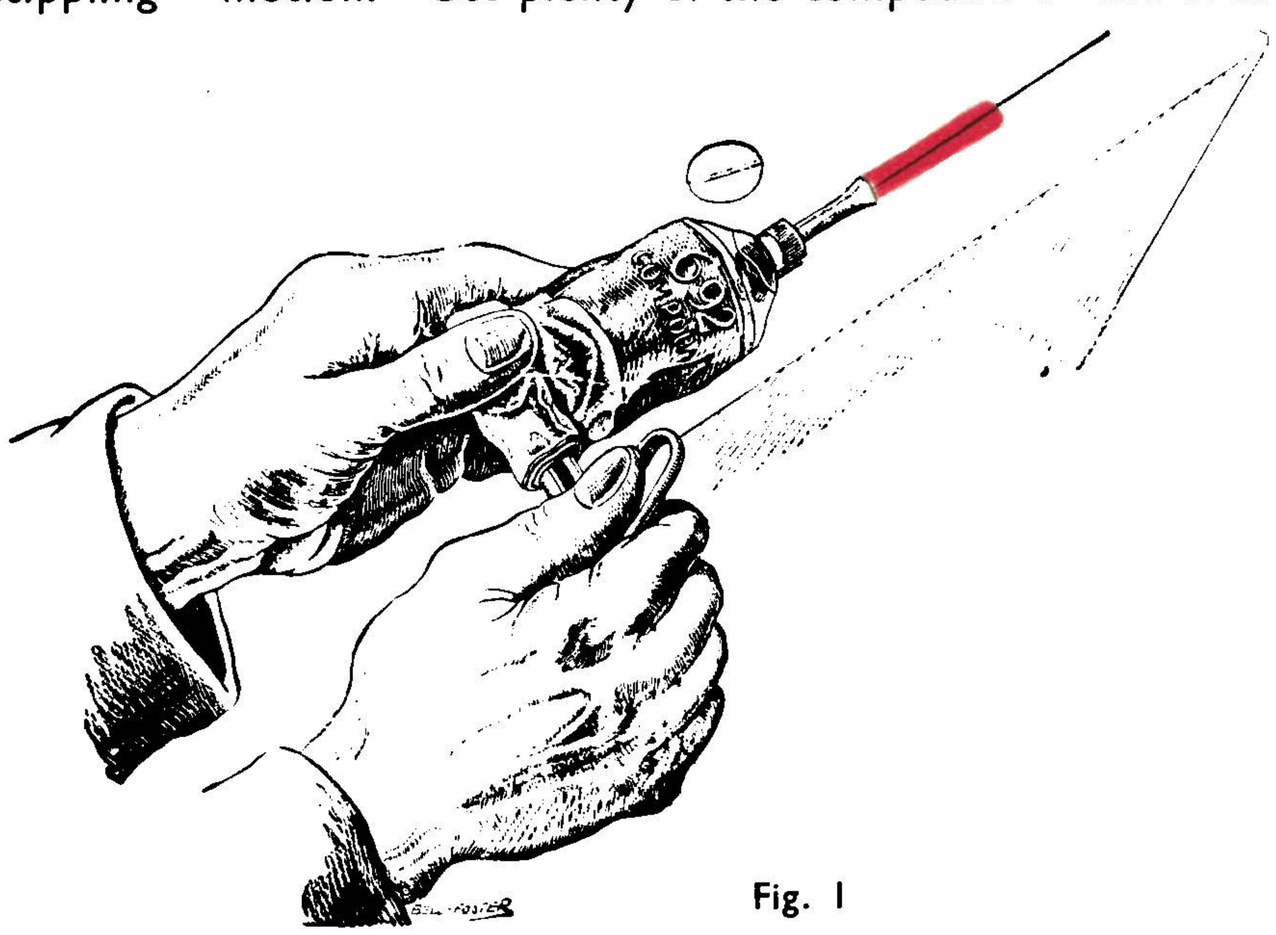


Fig. 1

Bostik 692 (see Fig. 1) is a sealing cement supplied in tubes, with detachable nozzles, and which are operated by winding a key at the bottom of the tube. Apply 692 by holding the nozzle to the seam

and turning the key. In cold weather warm the tube slightly to give an easy flow of compound, as if the cement is too stiff the tube will burst. **Replace the cap on the tube after use, and always keep the detachable nozzle clean.** Wash it out with Bostik cleaner before putting it away.

Boscoprene 551 is a sealing compound which sets without coming into contact with air. When set it is not affected by oil or heat, and therefore is used especially for sealing in such places as the engine compartment. It is supplied in two parts : Part A in tins and Part B in bottles.

To use : Shake the bottle well, add the whole quantity to the Boscoprene 551 Part A and mix well by stirring. **Boscoprene must be used immediately after mixing. Even replacing the lid on the tin will not stop it from setting hard.**

W.D. PRESSURE PLASTIC

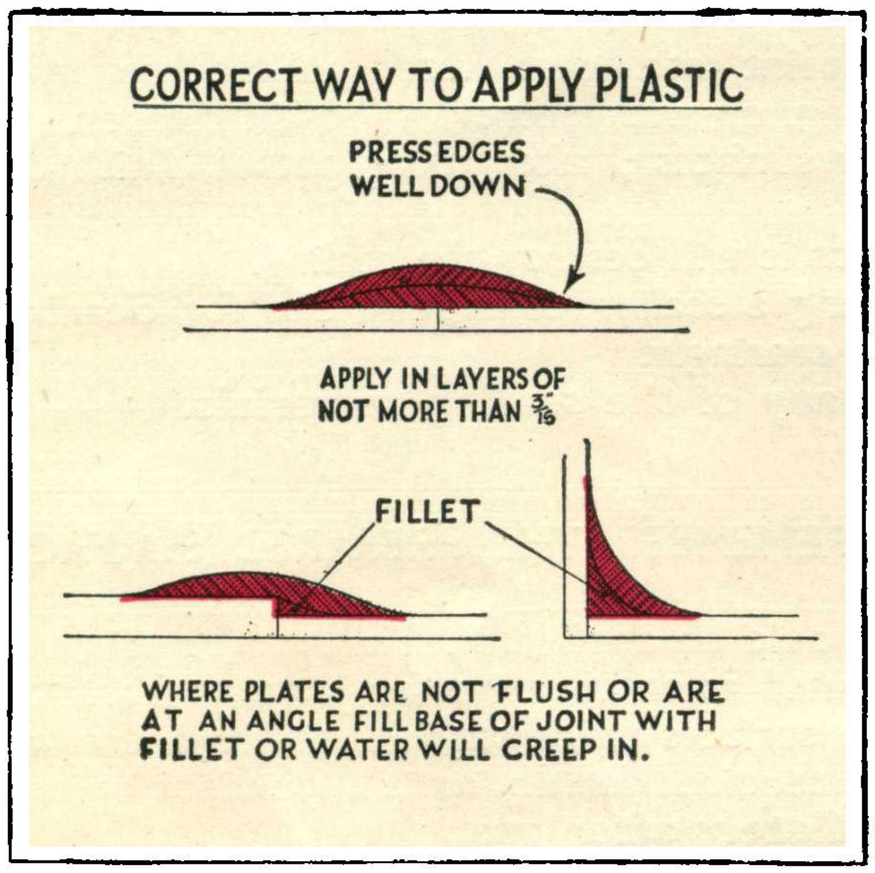

CORRECT WAY TO APPLY PLASTIC
PRESS EDGES WELL DOWN
APPLY IN LAYERS OF NOT MORE THAN 3/16"
FILLET
WHERE PLATES ARE NOT FLUSH OR ARE AT AN ANGLE FILL BASE OF JOINT WITH FILLET OR WATER WILL CREEP IN.

Fig. 2

W.D. Pressure Plastic (see Fig. 2) is a waterproof putty-like substance with which quite large holes can be filled. Where a large seal of plastic is required, it should be built up by putting on the plastic in layers, and worked out to a " feather " edge. Pressure Plastic is difficult to work, and must be made pliable by kneading.

If this does not make it workable enough it must be heated. The easiest way to do this is to cut up the plastic into workable sized lumps. Place one or two lumps in a tin, and put the tin into a bucket of hot water.

DO NOT WET THE PLASTIC.

SEALING FABRIC

Sealing Fabric is a waterproof fabric which must be handled with care and kept clean. It is supplied in pieces ready for fitting, but some trimming may be required. The fabric pieces will be stencilled to give the position in which they are to be fixed. Before fitting they must be examined for any holes or thin places. Repair by means of a fabric patch with Bostik C.

Fabric covers are attached to metal by means of Bostik C., which is applied to both surfaces and must be allowed to become tacky before making the joint.

Allow about one hour for the joint to set, then paint over the edges of the fabric and surrounding metal with Bostik AA. Avoid wrinkles at the edges of the fabric, and if a fold is necessary, make it at 45° to the edge.

Grease G.S. Used where ease of application and protection against corrosion are required. Apply by coating all parts specified.

A.C. (Asbestos Compound). A specially prepared sealing compound. Apply by coating it on the parts specified.

Two 1 in. brushes are supplied with the kits of sealing materials, check that they have bristles 1 in. long (i.e. the diameter of a halfpenny). If the bristles are longer, cut them off to this length. Cut bristles square.

One 2 in. brush is also supplied, check that the bristles are $1\frac{1}{4}$ in. long (i.e. the diameter of a penny). If the bristles are longer, cut them off square to this length.

INSPECT FOR

CLEANING before putting on the sealing compounds.

WASTE of materials through painting Bostik alongside of, instead of in the joints, leaving the lids off tins and failure to clean brushes.

EFFICIENCY of all sealing. Bostik must be applied in an unbroken film ; check that this is so in all awkward corners. Pressure Plastic and grease must present an unbroken surface, and the Pressure Plastic must be firmly pressed down at the edges. Fabric must be folded neatly, with no gaps in sticking down the edges.

SPECIAL KITS REQUIRED

V.A.O.S.Section and Part No.	Description	No.Off
LV1/NM/T110174	KIT "A"	1
LV1/NM/MC10184B	Side plate for rear cowl L.H.....	1
LV1/NM/MC10183B	Side plate for rear cowl R.H.....	1
LV1/NM/MC10178	Bottom angle plate for rear cowl	1
LV1/NM/MC10245	Shims for use between side plates and bottom angle plates (as required).	4
LV6/MT5/FB105/8D	Bolts for side plates 5/16-in. B.S.F. x 1-in. long	4
LV1/NM/NMS142/6	Plain washers	8
LV1/NM/MC10285	Washer packing for packing out towing hook bracket ($1\frac{3}{8}$-in.dia.).....	4
LV6/MT5/FB210/18D	Bolts spares ($\frac{5}{8}$-in.dia. x $2\frac{1}{4}$-in.long)....	3
LV1/NM/US374B	Rear cowl	1
LV1/NM/US367A	Tee bolt bracket (bottom)	4
LV1/NM/US368A	Tee bolt bracket (side)	2
LV6/MT5/FB105/8D	Bolts for Tee bolt brackets 5/16-in. B.S.F. x 1-in. 12	
LV1/NM/MC10210	Tee bolts	6
LV1/NM/MC10214	Wing nuts	6
LV1/NM/US384A	Air outlet duct	1
LV6/MT5/FB104/6D	Bolts for air outlet duct $\frac{1}{4}$-in. B.S.F. x $\frac{3}{4}$-in. 22	
LV6/MT5/24861	Washers shakeproof $\frac{1}{4}$-in. (NMS126/2).....22	
LV6/MT5/15842	Nuts hexagon $\frac{1}{4}$-in. B.S.F. (NMS1/1) 22	
LV6/MT5/FB308/10D	Screws, csk.hd. $\frac{1}{2}$-in. B.S.F. x $1\frac{1}{4}$-in. long	2
LV1/NM/TD13862	Packing pieces with studs and hexagon nuts (For trailer hook)	2
LV1/NM/US398A	Intake pipe extensions	2
LV1/NM/MC10215	Splash cowls for intakes	2
LV1/NM/US401A	Support brackets for intake pipes L.H....	1
LV1/NM/US402A	Support brackets for intake pipes R.H....	1
LV6/MT5/FB105/6D	Bolts supports to track guards 5/16-in. B.S.F. x $\frac{3}{4}$-in. 12	
LV6/MT5/15414	Washers shakeproof 5/16-in. (NMS126/3)...28	
LV6/MT5/18336	Nuts hexagon 5/16-in. B.S.F. (NMS1/2)....28	
LV1/NM/US408A	Stiffener for air outlet duct	2
LV1/NM/US409A	Packing piece	4
LV6/MT5/FB106/11D	Bolts for stiffener $\frac{3}{8}$-in. B.S.F. x $1\frac{3}{8}$-in.	4
LV6/MT5/19623	Nuts hexagon $\frac{3}{8}$-in. B.S.F. (NMS1/3)	4
LV6/MT5/9724	Washers shakeproof $\frac{3}{8}$-in. (NMS126/4).....	4
LV6/MT5/9729	Washers plain $\frac{3}{8}$-in. (NMS5/3)	2
LV1/NM/US425A	Baffle for rear cowl	1

V.A.O.S.Section and Part No.	Description	No.Off
LV6/MT15/NIV956	KIT "C"	1
LV6/MT15/NIV856	Covers waterproof for air cleaners (MC8825)	2
LV6/MT15/NIV947	Bungs wood for cables passing through bottom angle plate (2 pieces make one complete bung) (MC10246)	4
LV6/MT15/NIV948	Fabric patch. Hull drain (12-in. x 12-in.) (US390A) 1 spare	2
LV6/MT15/NIV949	Fabric patch petrol drain (3" x 4") (US391A)	1
LV6/MT15/NIV950	Fabric patch gun aperture (24" x 18") (US403A)	1
LV6/MT15/NIV951	Fabric patch ignition coils (30" x 12") (US404A)	1
LV6/MT15/NIV952	Fabric patch air intakes (60" x 12") (US405A)	4
LV6/MT15/NIV953	Fabric patch air intakes (22" x 10") (US406A)	4
LV6/MT15/NIV954	Fabric patch turret top (30" x 24") (US407A)	2
LV6/MT15/NIV726	Fabric patch control units and spare (20" x 20") (US329A)	4
LV6/MT15/NIV984	Fabric patch marked sealing front left hand locker (40" x 5") (US431A)....	1
LV6/MT15/NIV985	Fabric patch marked sealing locker front left hand (40" x 5") (US432A)	1
LV6/MT15/NIV986	Fabric patch marked sealing locker front left hand (18" x 5") (US434A)	2
LV6/MT15/NIV987	Fabric patch marked drivers lookout R.H. (3" x 9") (US426A)	1
LV6/MT15/NIV988	Fabric patch marked top of front locker (3" x 48")(US427A)	2
LV6/MT15/NIV989	Fabric patch outside edge of front locker (3" x 50")(US428A)	2
LV6/MT15/NIV990	Fabric patch top of rear locker (5" x 68") (US429A)	2
LV6/MT15/NIV991	Fabric patch outside edge of rear locker (3" x 68")(US430A)	2
LV6/MT15/NIV992	Fabric patch locker end (3" x 16") (US435A)	8
LV6/MT15/NIV193	Bostik cleaner ..... qt. tins	3
LV6/MT15/NIV194	Bostik 692 ..... tubes	3
LV6/MT15/NIV191	Bostik A.A. ..... qt. tins	4
LV6/MT15/NIV192	Bostik C ..... qt. tins	3
LV6/MT15/NIV195	Boscoprene Part A ..... tins	1
LV6/MT15/NIV196	Boscoprene Part B ..... bottles	1
LV6/MT15/NIV200	W.D. Pressure plastic ..... lbs.	14
LV6/MT15/NIV205	Insulating tape 2-oz. rolls (MT1/2249)..	3
LV6/MT15/NIV438	Asbestos compound ..... lbs.	84
LV6/MT15/NIV201	Grease G.S. ..... 7-lb. tins	1
LV6/MT15/NIV203	Lanolin ..... 1-lb. tins	2
LV6/MT15/NIV211	Scraper	1
LV6/MT15/NIV207	Brushes 1" wide x 1" long bristles....	2
LV6/MT15/NIV206	Brushes 2" wide x 1¼" long bristles...	1
LV6/MT15/NIV208	Wire brush	1
LV6/MT15/NIV210	Putty knife	1
LV6/MT15/NIV266	Asbestos string (¼" dia.) for sealing rear cowl..... ft.	10
LV6/MT15/NIV955	Sealing strip for rear cowl (US392A)..	1
LV6/MT15/NIV303	Bag signal No.1 (ZA15437)	2
LV6/CT/62/573	Instruction Book	1
LV6/MT15/NIV964	Kit "D"	1
LV6/MT15/NIV964	KIT "D"	1
LV6/MT15/NIV241	Cotton waste .....lbs.	1
LV6/MT15/NIV438	Asbestos Compound (Ex Kit "C")....lbs.	4
LV6/MT15/NIV955	Sealing strip for rear cowl spare (US392A)	1
LV6/MT15/NIV266	Asbestos string (¼" dia.) for sealing rear cowl ..... ft.	10

MAINTENANCE BEFORE SEALING

1. All contents of stowage bins mounted on trackguards must be checked and shortages reported ; all items of equipment must now be stowed correctly in the positions allocated. The lids should then be closed to ascertain whether they shut correctly, or are strained ; if they appear to be strained, contents must be re-packed until lids **do** close correctly. This is absolutely necessary to permit efficient sealing of all joints.

2. Internal inspection. **The inside of the vehicles must be thoroughly inspected for tightness of all stowage bins and equipment bolts, retaining screws and brackets. If any bolts are missing they must be replaced. A number of vehicles of this type have been re-worked, therefore all redundant holes must be sealed up with bolts or screws, using washers or washer plates as may be found necessary.**

3. Lubrication : **The vehicle must be completely and thoroughly lubricated,** paying particular attention to getting as much grease as possible into the road and tensioner wheel hubs.

In addition G.S. grease is applied all over the double bell crank lever of the brake operating gear, access to this is obtained through inspection cover (D) or (Y), see Fig. 4. The gear change control rods should also be greased.

4. Both tracks must be checked for correct adjustment ; if adjustment is necessary, it must be attended to now, see illustration Fig. 3.

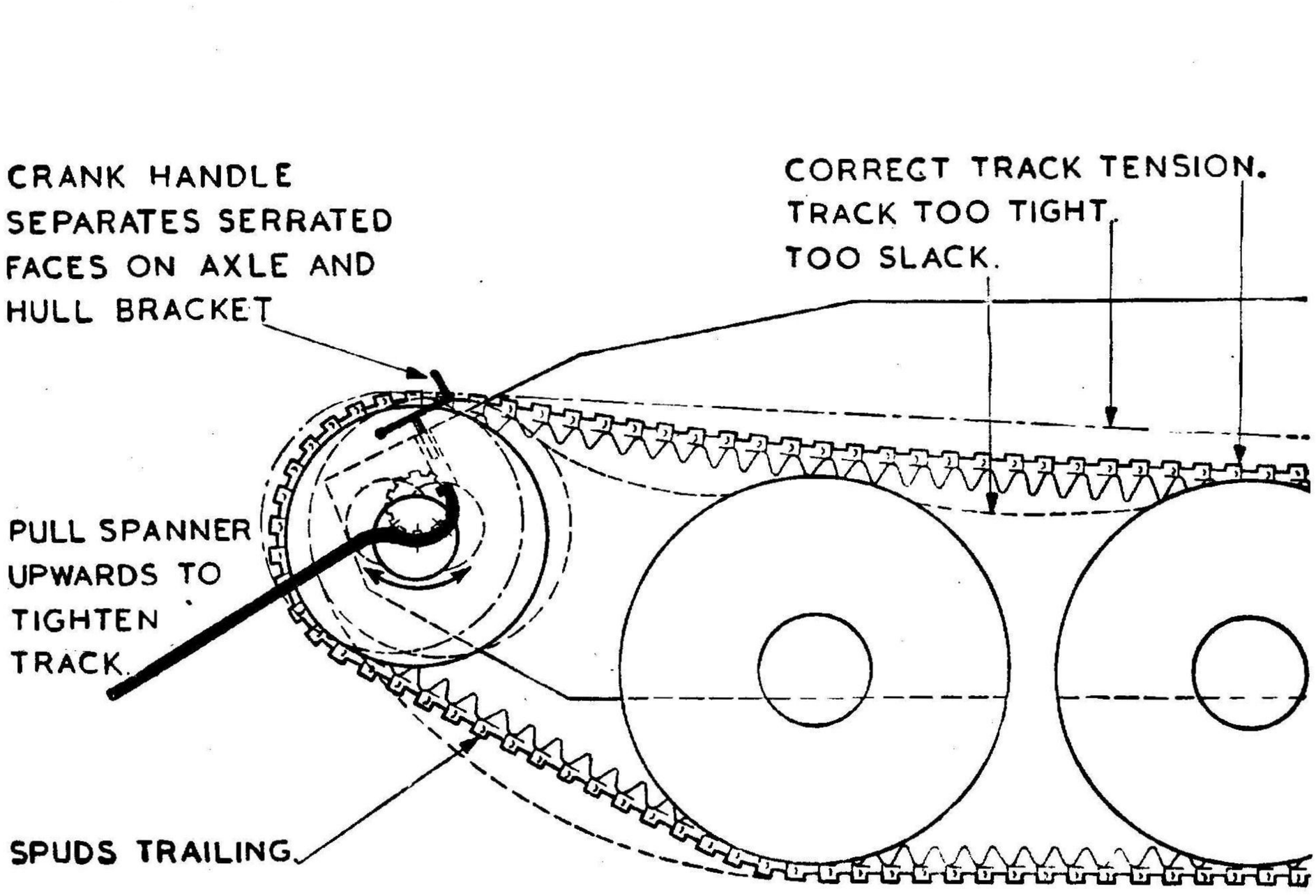

CRANK HANDLE SEPARATES SERRATED FACES ON AXLE AND HULL BRACKET
CORRECT TRACK TENSION.
TRACK TOO TIGHT.
TOO SLACK.
PULL SPANNER UPWARDS TO TIGHTEN TRACK.
SPUDS TRAILING.

Fig. 3

For correct adjustment the top run of the track should be just touching the 2nd, 3rd and 4th road wheels.
If any further information on tracks is required, consult the vehicle instruction book.

5. Cleaning down externally : **All** mud and dirt, etc., adhering to the hull must be cleaned off, special attention being paid to the underside of the floor plate, particularly inspection covers, hinged rear flaps and drain plugs.

The correct procedure for cleaning is :—

Remove heavy incrustations of mud by scraping or brushing. Wash down the vehicle with a plentiful supply of water. An ordinary stirrup pump has been found efficient in doing this work, using the jet to remove obstinate particles of mud.

Dry off the water, either by wiping or by allowing it to stand for a sufficient time.

It is imperative that all traces of oil or grease are removed. Clean off by using a rag soaked in petrol. **On no account must rag or cotton waste be dipped into the vehicle fuel tanks ; petrol for cleaning purposes must be laid aside in a can. Never attempt to use paraffin or fuel oil for cleaning**—both fluids come under the category of **OIL** which must be cleaned off.

Clean all parts to which sealing compound is to be applied by using Bostik cleaner.

Remove all bolted-on inspection covers ; in the case of vehicles with hinged rear flaps, these should be opened. The opening up of these inspection holes will permit the crew to ascertain that all petrol and oil pipe connections are tight and free from leaks. If any leaks are encountered they must be found and stopped, before commencing to seal.

6. Clean all filters in the fuel system. Fill the oil and fuel tanks, in the latter case use an external filter. Re-fuelling must be done before sealing, as fuel or oil, if spilt, will destroy the efficiency of any sealing it may come in contact with.

7. Remove external fire extinguishers complete with their brackets and stow inside the vehicle until after wading.

IMPORTANT : Take particular care not to lose bolts, nuts, screws and washers. These must be stowed in a safe place on the vehicle.

WORK CARRIED OUT IN THE FIELD *Stage 1*

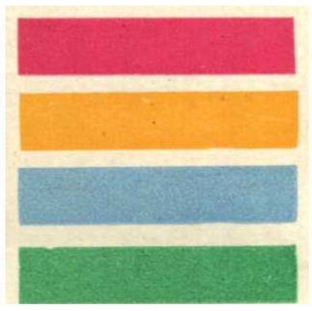
The illustrations used in this book have the various sealing materials used indicated in colour as follows :—

BOSTIK 692 AND AA. AND PRESSURE PLASTIC ...

BOSCOPRENE 551 ... ...

SEALING FABRIC ... ...

A.C. ... ...



HULL BOTTOM PLATES (See illustration, Fig. 4).

Two men required for the following tasks :—

8. All outside edges of hull bottom plate ; side, front and rear are painted over with Bostik AA. Rivets and channels, etc., in hull side are not included in this task.

9. The seam approximately at the centre of the floor plates, where the front armour plating finishes, and the seam between the two halves of the armour plating are sealed with Bostik 692, finally painted over with Bostik AA.

10. All bolt and rivet heads are sealed up by painting over with Bostik AA.

11. All screwed plugs (K), (L), (M), (N), (P) and (T) are sealed by painting over with Bostik AA.

12. All bolted-on inspection covers (C), (D), (E), (F), (G), (H) and (J) that were previously removed must have their mating surfaces, and the floor plate mating surfaces, scraped and thoroughly cleaned by using cotton waste soaked in Bostik cleaner. Boscoprene is then applied to **both** mating surfaces, retaining screws dipped in Bostik AA., and the covers refitted. Paint over the edges of " bolted-on " covers, including all retaining screw heads, with Bostik AA.

Regarding vehicles fitted with hinged rear inspection flaps (X) and (Y), these must have **both** mating surfaces (for example, flap and floor plate) cleaned as above, including the corners of the floor plate mating surface. Boscoprene is then applied to **both** mating surfaces, and the flaps closed, making sure that the catches are right home, otherwise the flaps will work loose and your sealing be spoiled. All gaps and crevices must be sealed with Bostik 692 ; finally paint edges over with Bostik AA., including the whole of the catches and hinges.

IMPORTANT : Boscoprene **MUST** be applied in one set of operations ; even replacing the lid on the tin will **not** stop it from setting.

13. Cooling system drain hole (S) ; paint well up inside and over the drain hole with Bostik AA. after having been inside the vehicle and made sure that the drain housing valve is screwed down tight.

14. The left-hand petrol tank drain hole (R) is sealed off with a patch of fabric 4 in. × 3 in. ; a corresponding area of the bottom plate is cleaned with Bostik cleaner ; Bostik C. is thinly and evenly applied. When tacky, the piece of fabric is stuck on, the fabric and surrounding plate is then painted over with Bostik AA.

15. The hull drain valve (A) is sealed by means of a fabric patch. The valve, its protecting ring and surrounding floor plates are cleaned, and then Bostik C. is evenly painted over the above mentioned parts, including the fabric patch. When this becomes tacky, a patch of fabric 12 in. × 12 in. is applied over the valve. Particular care must be taken to see that the edges of the fabric are well stuck down, since one edge of the fabric overlaps the rear inspection flap (D). Then paint about 3 in. all around the edges of the patch and surrounding plates with Bostik AA.

On some vehicles the drain flap (B) is fitted ; this is dealt with in a similar manner to that described above, using a fabric patch 12 in. × 12 in.

16. **The hull bottom plate sealing must now be thoroughly inspected by the supervising officer.**

If any redundant holes are found they MUST be sealed as called for at Task 2.

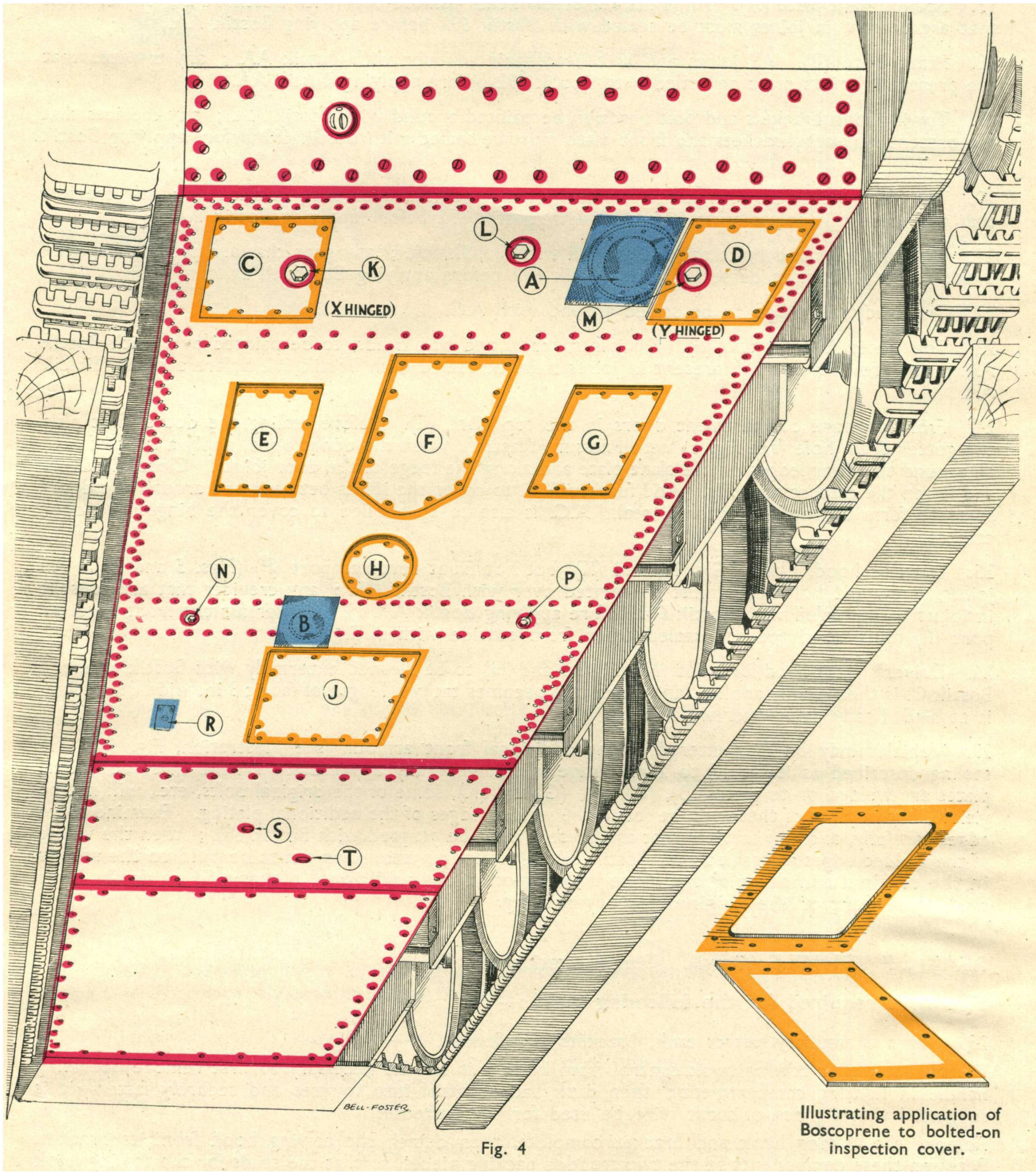


Fig. 4

Illustrating application of Boscoprene to bolted-on inspection cover.

FRONT OF VEHICLE (see illustration, Fig. 5).

One man required for the following tasks :—

17. Bottom slant plate (A). All joints and screw heads painted over with Bostik AA. ; any crevices that are present in joints must be sealed with Bostik 692 before applying Bostik AA.

18. Front plate (B). All joints and bolt heads painted over with Bostik AA. ; any crevices that are present in joints must be sealed with Bostik 692 before applying Bostik AA.

19. Towing loop brackets and bolt heads to be painted around with Bostik AA. ; any crevices that are present between brackets and front plate must be sealed with Bostik 692 before applying Bostik AA.

20. Top slant plate (C). All joints and screw heads painted over with Bostik AA. ; any crevices that are present in joints must be sealed with Bostik 692 before applying Bostik AA.

21. Sling brackets and bolts painted around with Bostik AA. ; any gaps that are present between bracket and plate must be sealed with Bostik 692 before applying Bostik AA.

22. Track adjusting caps to be sealed around with A.C.

23. Top plates (D), (E) and (F). All joints, screw and bolt heads, to be painted over with Bostik AA. ; any crevices that are present in joints must be sealed with Bostik 692 before applying Bostik AA.

24. Front stowage compartment doors in the top plate (E). Before sealing the doors, first plug the gutter drain hole (see Fig. 5) with Pressure Plastic. With the doors open, apply a fillet of A.C. all around the door ledges on the slant plate and along the ledge of the door joints. Close the doors and fasten the catches securely. Add further A.C. to cover the joints between and around the doors so as to form a complete external seal. A.C. is also to be applied to cover the hinges and door catches.

25. Driver's hood, plates (G), (H) and (K), but not front revolver port (P) (Figs. 5 and 23). All joints, screw and bolt heads must be painted over with Bostik AA. ; any crevices that are present in joints to be sealed with Bostik 692 before applying Bostik AA. The cover for the front revolver port (P) must be closed and sealed down from outside with A.C.

26. Driver's right-hand look-out (N) (Figs. 5 and 23) to be cleaned externally with Bostik cleaner ; Bostik C. is then evenly applied, and when this becomes tacky a length of fabric 3 in. wide × 9 in. long is applied, finally paint over with Bostik AA.

27. Vehicles may be encountered having additional front armour (see illustration, Fig. 6) ; the sealing described as items 17 to 26 inclusive is still generally applicable. Where these additional plates are welded on to plates (B), (C), (F), (G) and (K), some of the original bolts, etc., will not be visible, but in place of these will be found the welded edges of the additional plating. Examine these edges carefully, and any crevices that are present must be plugged with Bostik 692 ; then the whole of the welded edges are sealed with Bostik AA. **Particular attention must be paid to the seams in the original armour plating, since welding on of the additional plates will no doubt have destroyed part of the original factory sealing.**

REAR OF VEHICLE (Cowl). (See illustration, Fig. 7.)

Two men required for the following tasks :—

28. Remove auxiliary petrol tank, brackets and fittings.

Disconnect trailer towing hook control from hook ; it will be necessary to first remove operating handle in fighting compartment ; then push back control into louvres and securely fasten—it is suggested that a piece of stout wire be used for this purpose.

Remove the towing hook and bracket complete, then detach the towing hook from its bracket. Between these components fit the two studded packing pieces, so that the studs for the towing hook are 1 in. lower than originally positioned.

Open the top inspection flaps over gearbox and brakes.

If any redundant holes are found they MUST be sealed as called for at Task 2.

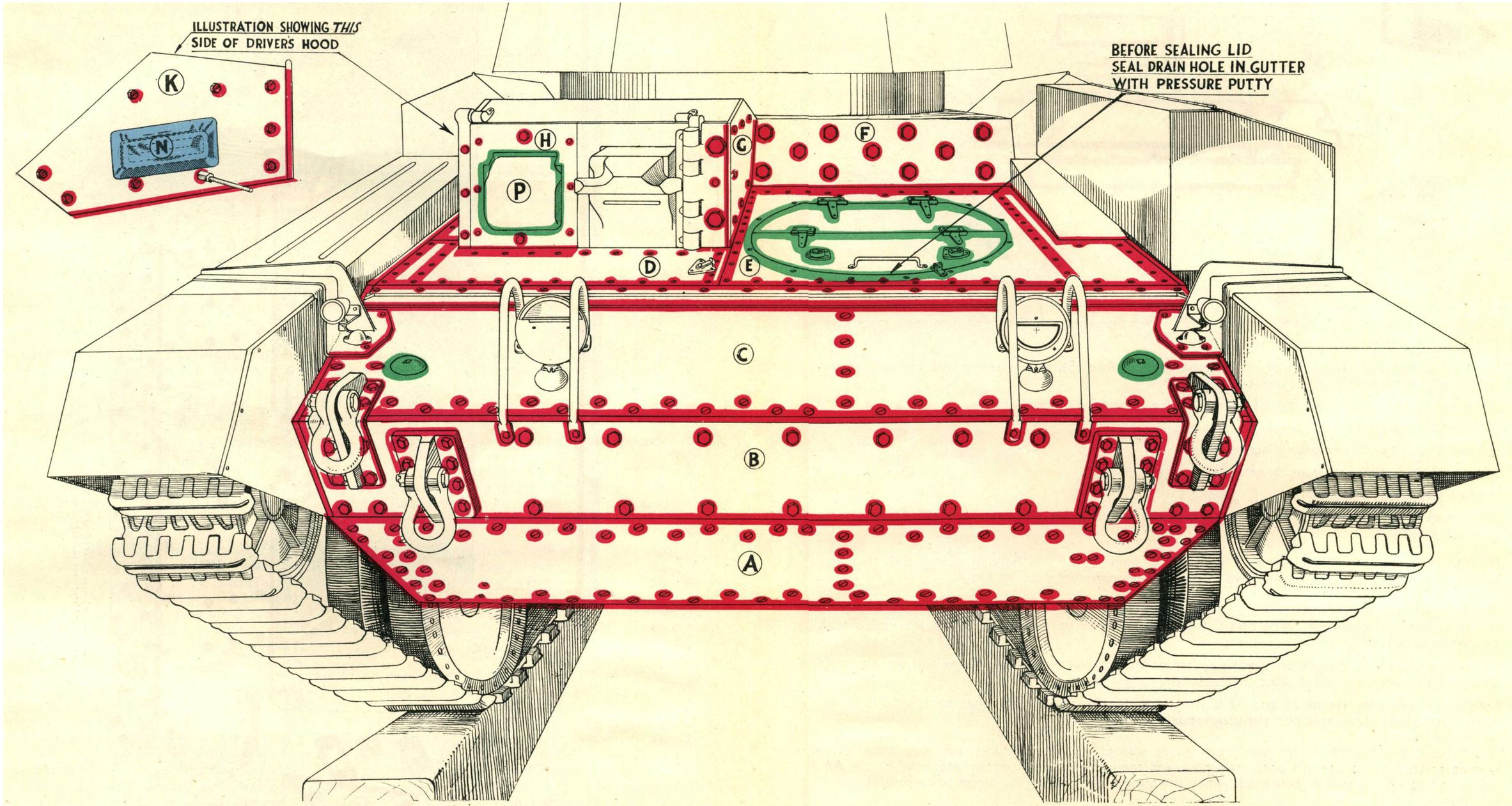


ILLUSTRATION SHOWING THIS SIDE OF DRIVERS HOOD
BEFORE SEALING LID SEAL DRAIN HOLE IN GUTTER WITH PRESSURE PUTTY
K
N
H
P
G
F
D
E
C
B
A

Fig. 5

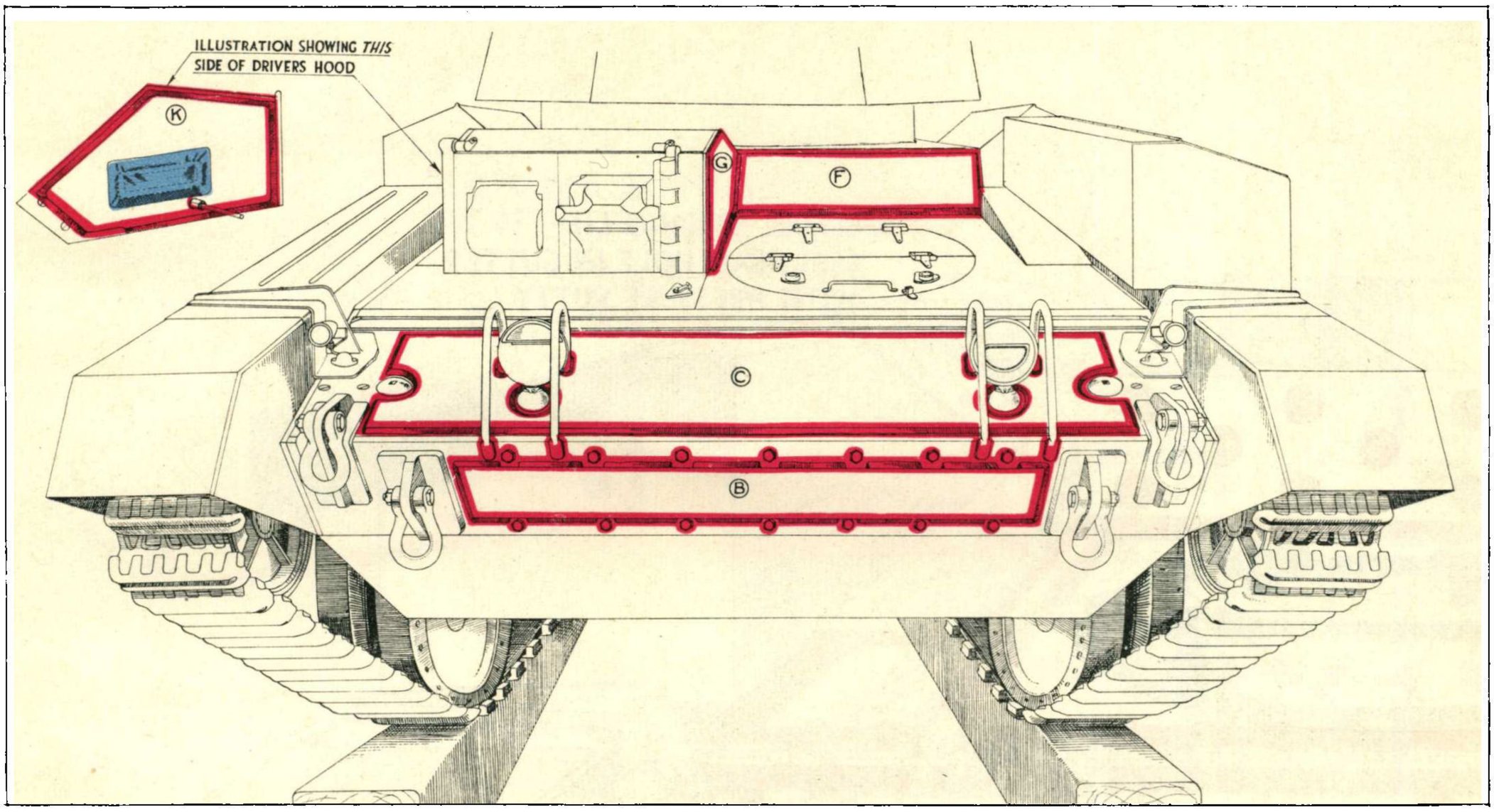


Fig. 6

Remove the remaining ten bolts from along top edge of plate (E), remembering that the nuts on the back of the hull plate must be removed first.

Disconnect cables from both tail lamps and smoke generator junction boxes.

Remove both tail lamps and brackets complete.

Remove both smoke generator junction boxes.

Remove both smoke generator boxes.

Remove jack box, if fitted.

Important : Do not lose any of the nuts, bolts and washers that you have removed, these will be required again later.

29. On the rear top louvre plate (see Fig. 8) will be found two bolts (A), one at each end, these are to be removed and replaced by the two countersunk screws provided in Kit A.

30. Fit cowl bottom angle plate, using existing bolts, painting liberally top of main plate and mating surface of bottom angle plate with Bostik AA. before bolting up. Paint all bolt heads with Bostik AA. when in position.

It may be necessary to remove one smoke generator box bracket to facilitate fitting this bottom angle plate ; if so, replace bracket after fitting bottom angle plate.

Before commencing items 31 and 32 it must be clearly understood that each side is to be dealt with separately and not simultaneously.

31. Remove five bolts from left-hand rear louvre side plate. Fit left-hand cowl side plate, using existing bolts, painting liberally both main plate and cowl side plate mating surfaces with Bostik AA. before bolting up. Finally all bolt heads, when in position, and reinforcing pieces to be painted round with Bostik AA.

32. The right-hand cowl side plate is fitted in a similar manner to that described at Task 31.

All bolt heads and joints in plating in the gearbox compartment to be sealed from the inside with Bostik AA. This does not include the hull bottom plate.

When carrying out work called for in items 31 and 32, some of the original bolts may be found to be short when refitted ; replace them with spare bolts supplied in Kit A.

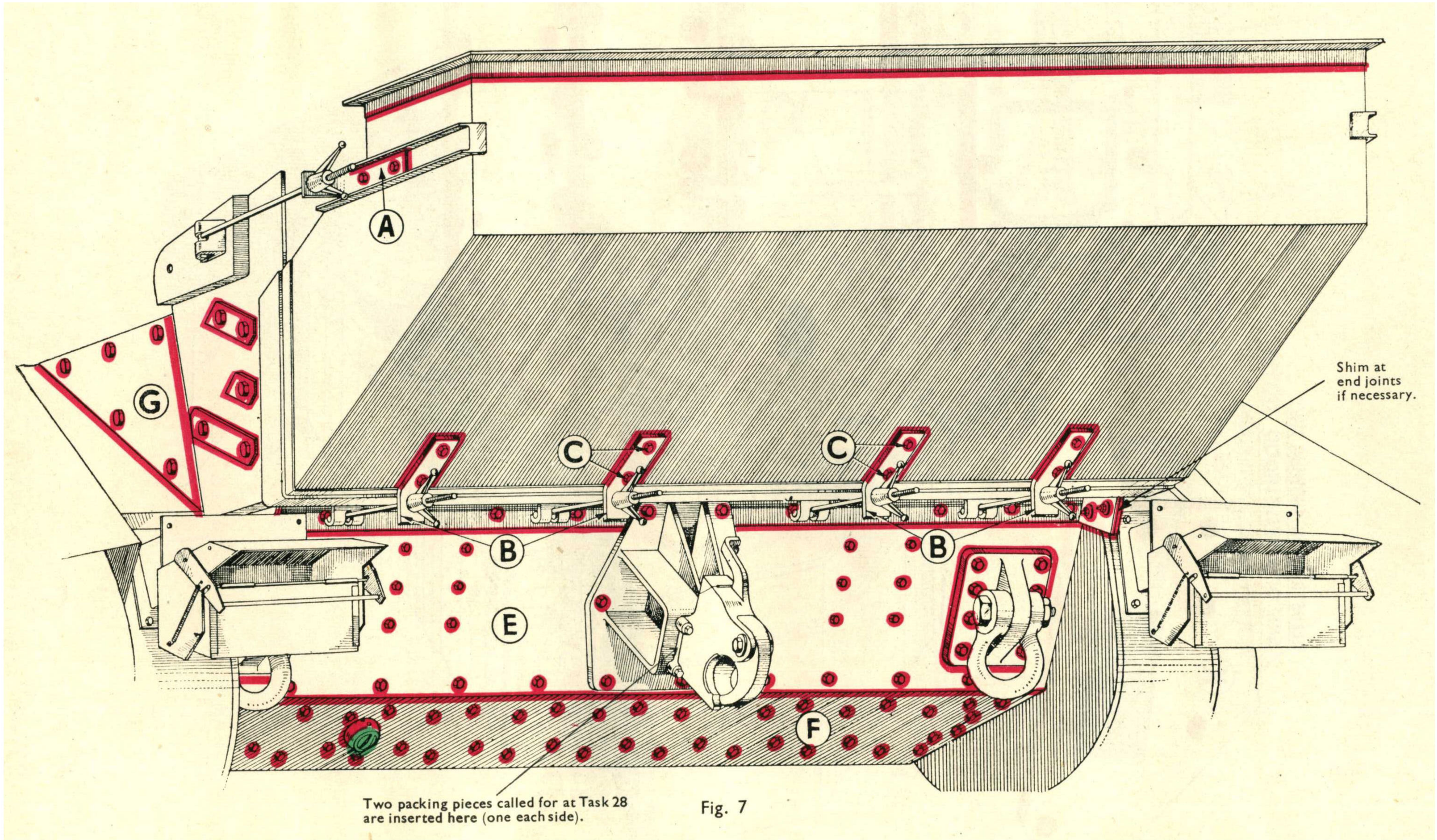

A
G
C
C
B
B
E
F
Shim at
end joints
if necessary.
Two packing pieces called for at Task 28
are inserted here (one each side).

Fig. 7

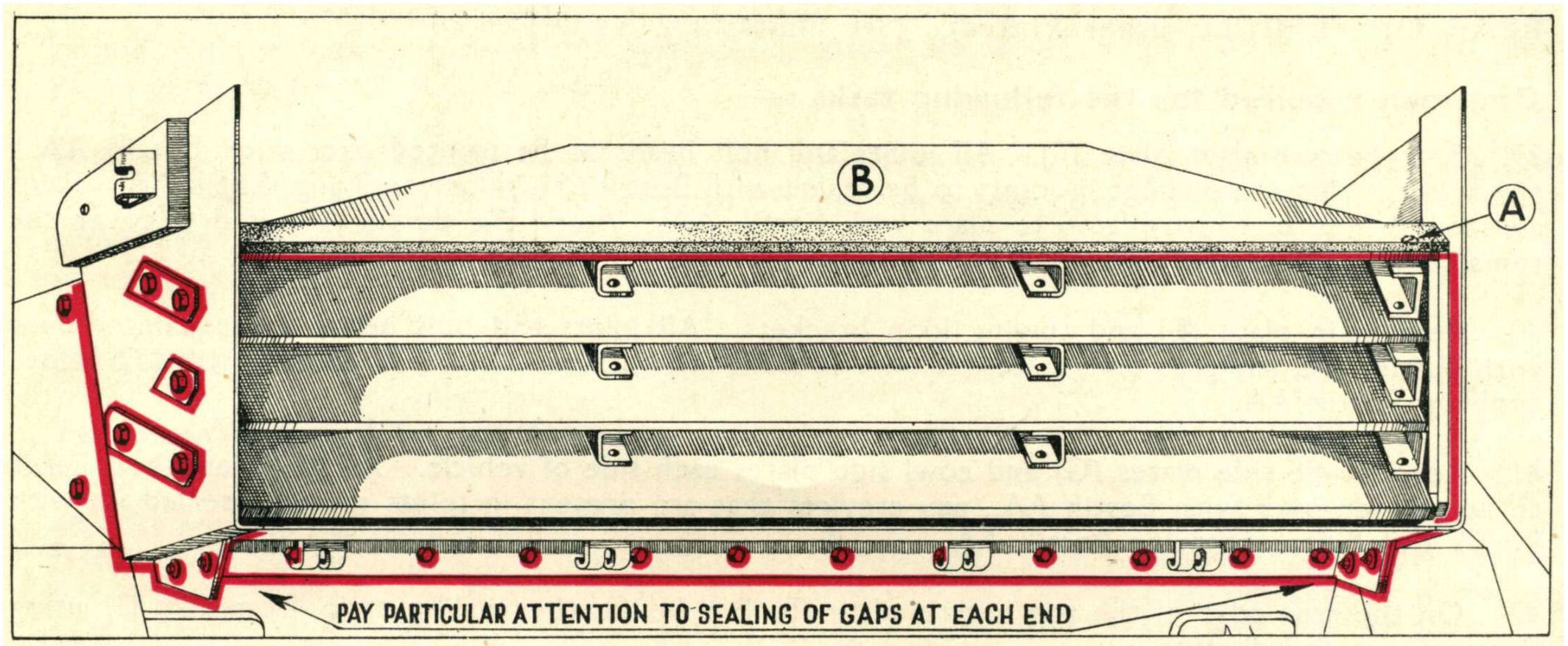


Fig. 8

33. Refit towing hook and bracket complete, using existing bolts, the two top bolts must be " bedded " in with Bostik AA. ; the four remaining bolts to be refitted, using the **packing washers** supplied in the kit, **at each bolt between bracket and main plate ;** bed each washer in position with Bostik AA. ; finally paint over all bolt heads with Bostik AA.

34. Refit tail lamps and brackets to bottom angle plate, using existing bolts and washers. Reset (bend) the lamp brackets to suit when in position, paint around fixing bolts and brackets with Bostik AA.

35. Refit smoke generator junction boxes ; but before fitting, **fill inside the bottom with A.C.**

On some vehicles the junction boxes are fitted on the sides of the smoke generator box brackets ; in such cases refit the junction boxes on the **top** of the brackets.

36. Refit the smoke generator boxes, matching the **two top holes** in the smoke boxes with the **two bottom holes** in the brackets ; that is, refit the smoke boxes in a lower position than originally fitted.

37. Fit tail lamp and smoke generator cables through holes in cowl bottom angle plate. Connect cables back to tail lamps and smoke generator junction boxes ; in the case of junction boxes with metal covers the cables are to be refitted to the two terminal posts and not to the original connectors in the base of the junction boxes. If cables are short the Unit electrician must be called in to splice a piece on. Fit wood bungs around cables where they pass through angle plate, chamfering and shortening bungs, if necessary, to accommodate short cables. Seal cables and bungs in position with Bostik 692, finally paint over with Bostik AA.

38. Bolt two tee bolt brackets (A) on to the sides of the rear cowl, and four brackets (B) on to the bottom, painting the mating surfaces with Bostik AA. and sealing in the fixing screws with the same compound. When fitting the two centre bottom tee bolt brackets, fit also the exhaust baffle plate ; this is fitted **inside** the cowl and is held in position by the bolts (C) which fix the tee bolt btackets. The rear cowl is then fitted dry (no sealing material between cowl and flanges) by registering its groove with the flanges formed by the side plates and bottom angle plate already fitted (see Tasks 30, 31 and 32). Fit the six tee bolts into the hooked brackets on the side and bottom plates, the wing nuts are securely tightened up, forcing the groove of the cowl well on to the flanges. The corner joints between cowl side and bottom angle plates are now completed (using shims provided, if necessary ; these shims to be bedded in with Bostik 692). All joints and crevices at these corners are to be sealed with Bostik 692, being finally painted over with Bostik AA.

Remove the cowl by slackening off wing nuts and unhooking the tee bolts from the hook brackets on the side and bottom angle plate. Inspection flaps over gearbox and brakes can now be closed.

If any redundant holes are found they MUST be sealed as called for at Task 2.

REAR OF VEHICLE (Rear Plates). (See illustration, Fig. 7.)

One man required for the following tasks :—

39. Rear bottom slant plate (F). All joints and bolt heads to be painted over with Bostik AA. ; any crevices that are present in joints to be sealed with Bostik 692 before applying Bostik AA. Paint all around base of convoy lamp to plate with Bostik AA. When the Bostik AA. is dry, cover the remainder of the convoy lamp with A.C.

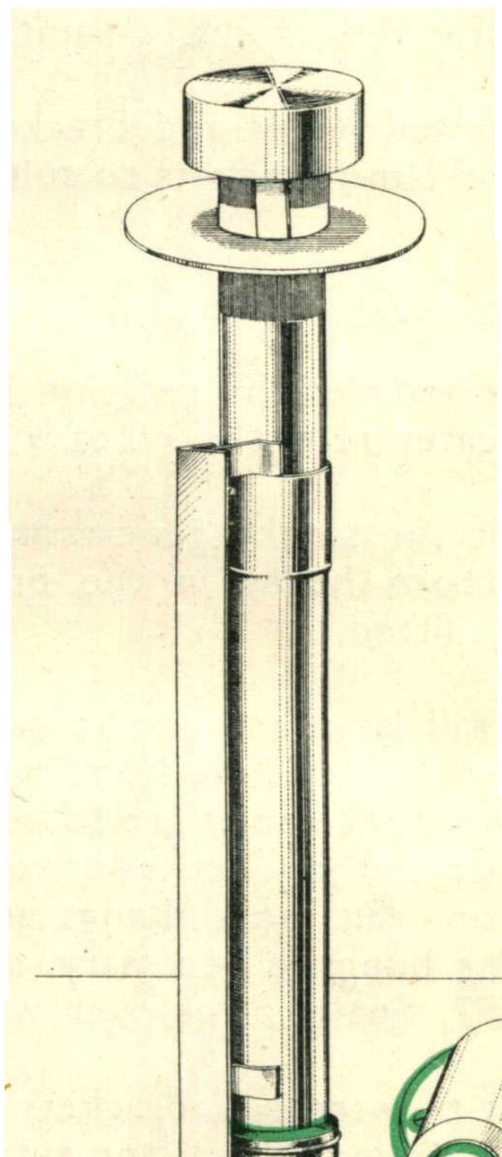
40. Rear main plate (E) and towing loop brackets. All joints and bolt heads to be painted over with Bostik AA., any gaps or crevices that are present in joints must be sealed with Bostik 692 before applying Bostik AA.

41. Rear louvre side plates (G) and cowl side plates each side of vehicle. All joints and bolt heads to be painted over with Bostik AA., any crevices that are present in joints must be sealed up with Bostik 692 before applying Bostik AA.

42. On the rear edge of the top louvre plate (B, Fig. 8), fit the sealing strip from Kit C, using Bostik C. as an adhesive.

43. When the sealing called for at Tasks 30 to 42 has set, refit the rear cowl as previously instructed at Task 38, except that the sealing groove on the cowl is to have asbestos string from Kit C rammed well down to the bottom ; A.C. is then applied, packing the groove as full as is possible on top of the string.

When the cowl is fully tightened, this joint, together with that formed by the sealing strip, is then liberally coated on the outside with A.C. (see Fig. 7).



AIR INTAKES TO CARBURETTERS AND CLEANERS. (See illustration, Fig. 9.)

Unit fitter required for Task No. 44.

44. The air intake elbows are disconnected from the air cleaners and the joints between elbows and horizontal intake pipes are loosened to permit of the elbows being turned up vertically.

Using existing rubber connections and clips, fit the intake pipe extensions with their lugs facing out towards the trackguard edges. Insert the splash cowls into the tops of these extensions again with lugs facing outwards and bolt the support brackets to the two lugs as shown in Fig. 9. The bases of the support brackets are to sit square on the trackguards, and from the brackets mark back the fixing holes and drill trackguards to suit. Tighten up all fixing bolts and clips ; the fixing bolts should be fitted with their heads under the trackguards, the nuts being on top to facilitate removal as called for at Task 86.

Seal all the joints between elbows and pipes and between horizontal pipes and the fixed cast elbows with A.C. as illustrated, together with the fixing bolts, nuts, etc.

The air cleaners are then fitted with the waterproof covers provided and secured in position by tightening and tying the draw strings.

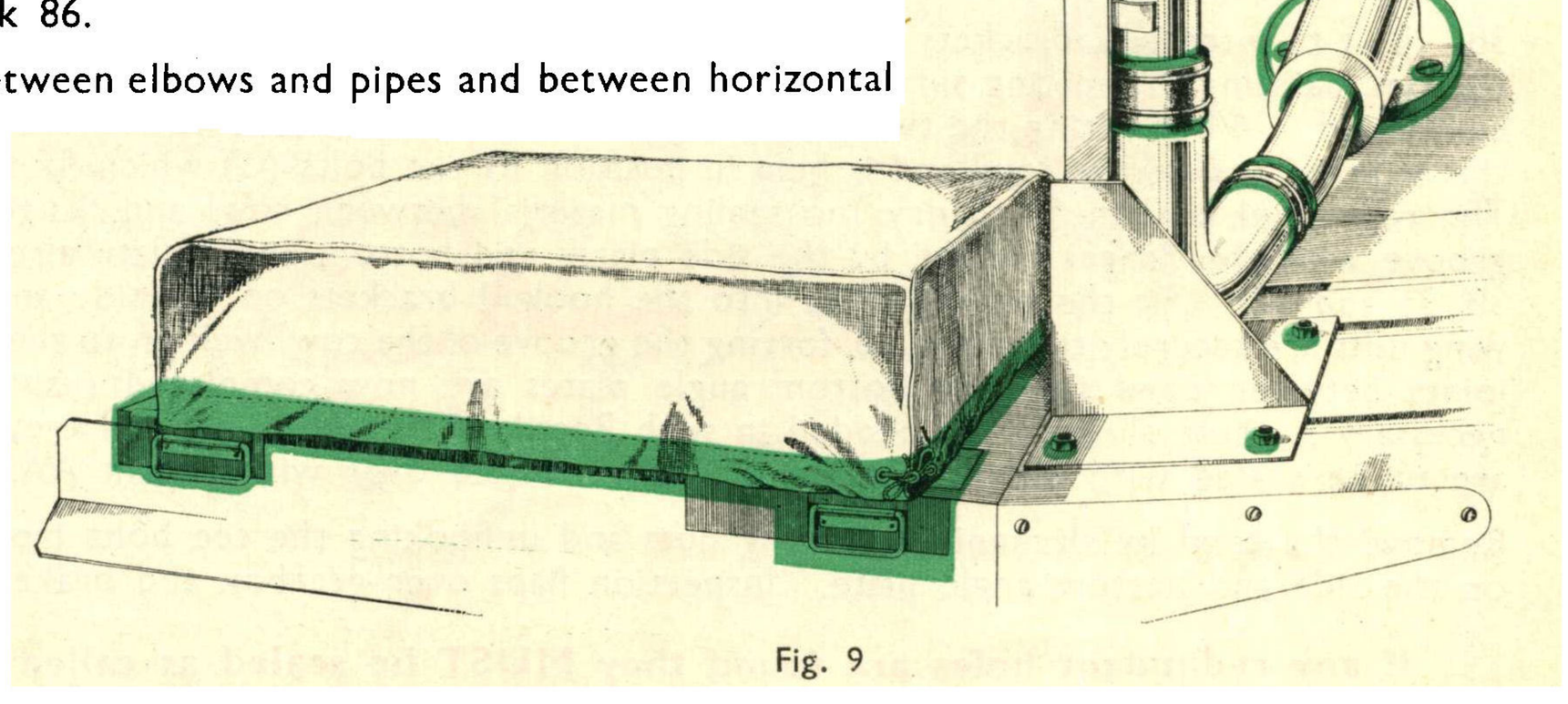


Fig. 9

45. Apply G.S. grease all over the sliding faces and outside ends of the two trays in each air cleaner ; in addition the bottom edges of the waterproof covers are sealed on to the air cleaners by means of a liberal coating of A.C. as shown.

Whilst the air intake pipes are in position, **the hinged inspection flaps over the steering units will not open to their full extent without hitting the splash cowls.** If you have reason to open these flaps, take care that they are kept clear of the intake pipes.

LOCKERS ON TRACKGUARDS. (See illustration, Fig. 10.)

Two men required for the following tasks, one man on each side of vehicle :—

46. Remove all stowage, then seal all joints (excepting lids, which will be open) from inside, using Bostik AA. All large gaps and holes are to be first plugged with pressure putty before applying Bostik AA. When sealing is dry, replace all equipment in the lockers, taking care to stow correctly as previously mentioned in " MAINTENANCE BEFORE SEALING," then close the lids down.

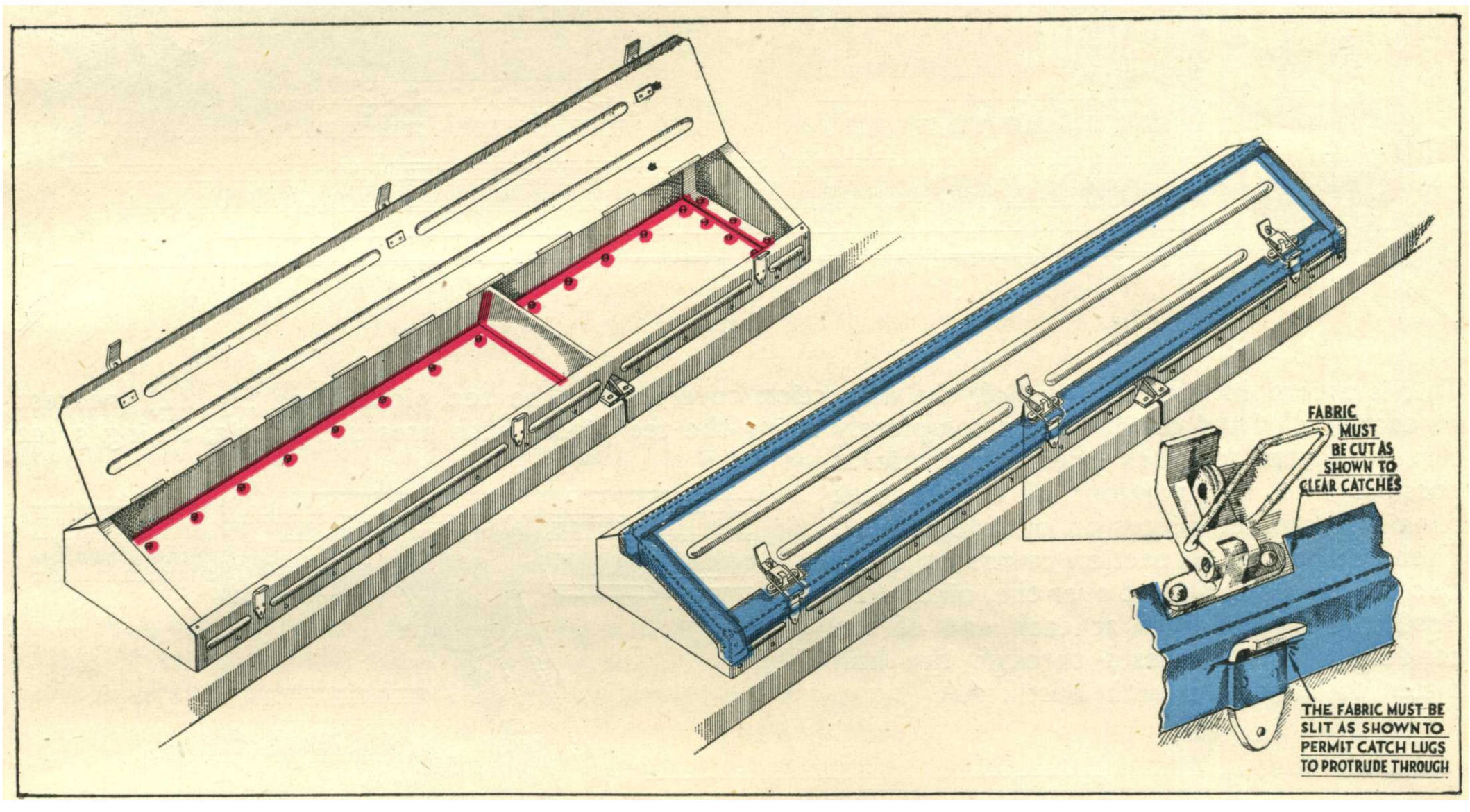


Fig. 10

Clean edges of lids and surrounding portions of lockers with Bostik cleaner, then apply Bostik C. evenly, and as soon as it becomes tacky fit the fabric strips provided. These strips are clearly marked to show which joints they are used on. The pieces fitted on the outside edges of the lockers will require cutting and slitting to clear the catches, this is clearly shown on the inset illustration (see Fig. 10). The catches and padlocks are then coated with A.C.

It should be noted that under actual operational conditions it may be desirable (at Squadron Commander's instructions) to carry out the work covered by this item on the landing craft, since some items of stowage may be required during the sea voyage.

If any redundant holes are found they MUST be sealed as called for at Task 2.

LAMPS, HEAD, SIDE AND TAIL—SMOKE GENERATORS.

47. Test all lights and smoke generator wiring ; this latter can be checked by connecting a 12-volt bulb across the two terminals in each smoke generator junction box.

One man required for the following tasks :—

48. The conduit carrying head and side lamp wiring across the driver's and the L.H. front compartments must be sealed by plugging the conduit with pressure putty, as shown at Fig. 11.

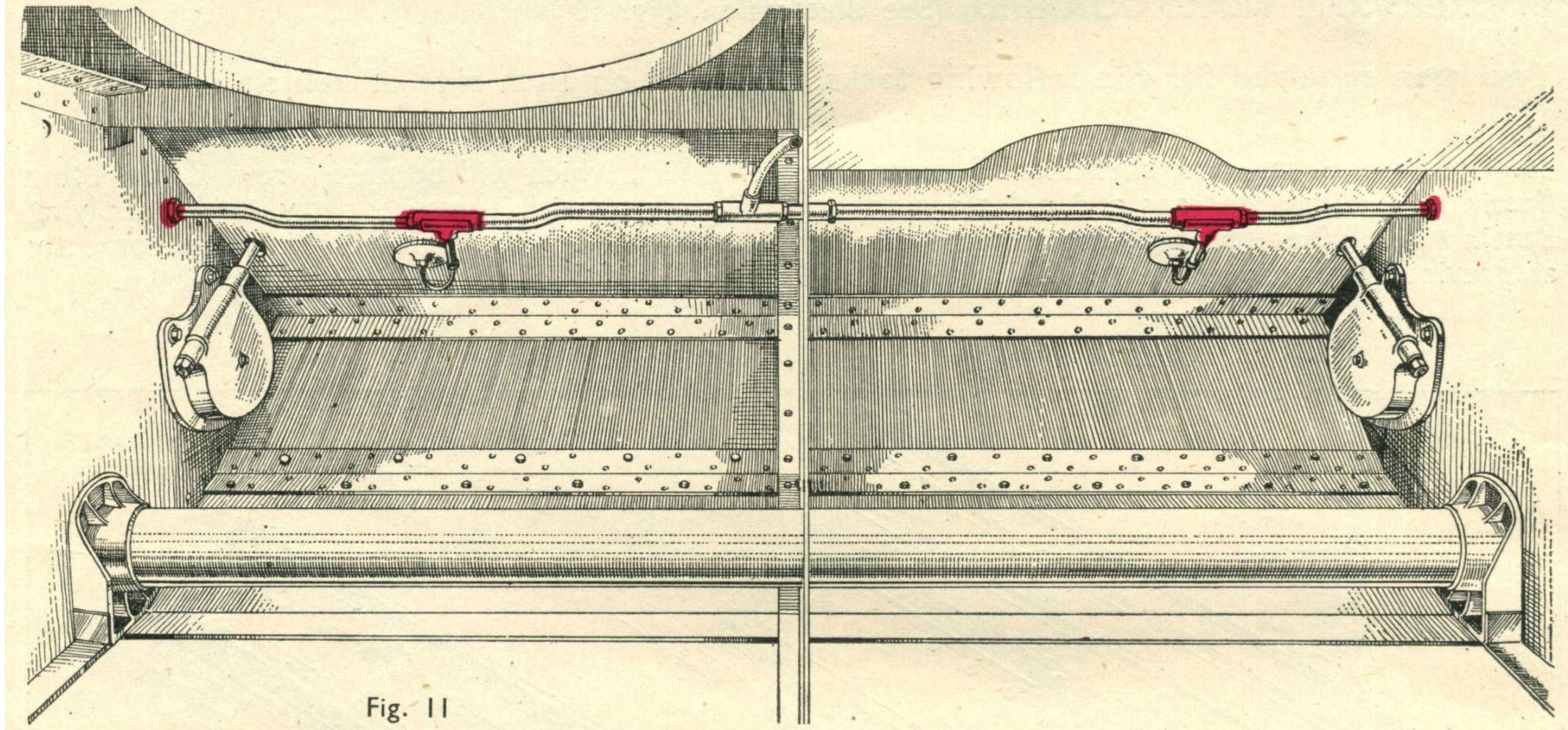


Fig. 11

This is accomplished by taking off the inspection covers from the tee pieces (see Fig. 12) (nearest to each end of the conduit) and completely filling the tee pieces with pressure plastic, taking great care to insert as much pressure plastic as possible into the portions of the conduit running from tee pieces to outside of hull. Then replace the inspection covers on these two tee pieces and paint over the joints with Bostik AA. The nuts at each end of the conduit where it passes through the hull plates to be sealed with Bostik AA.

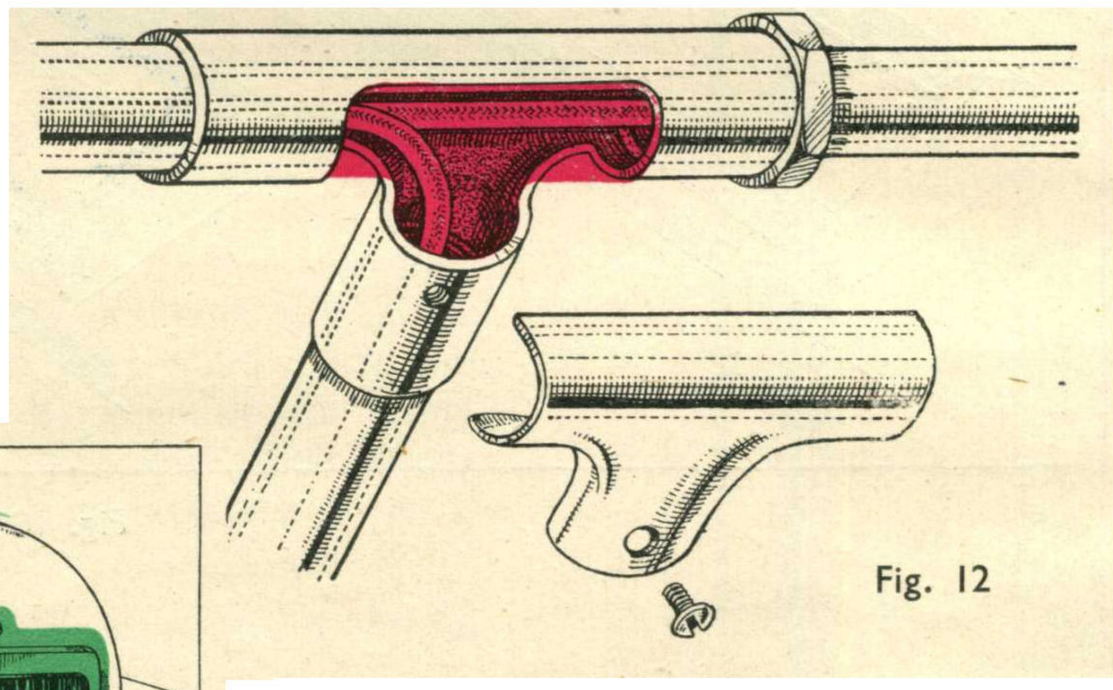


Fig. 12

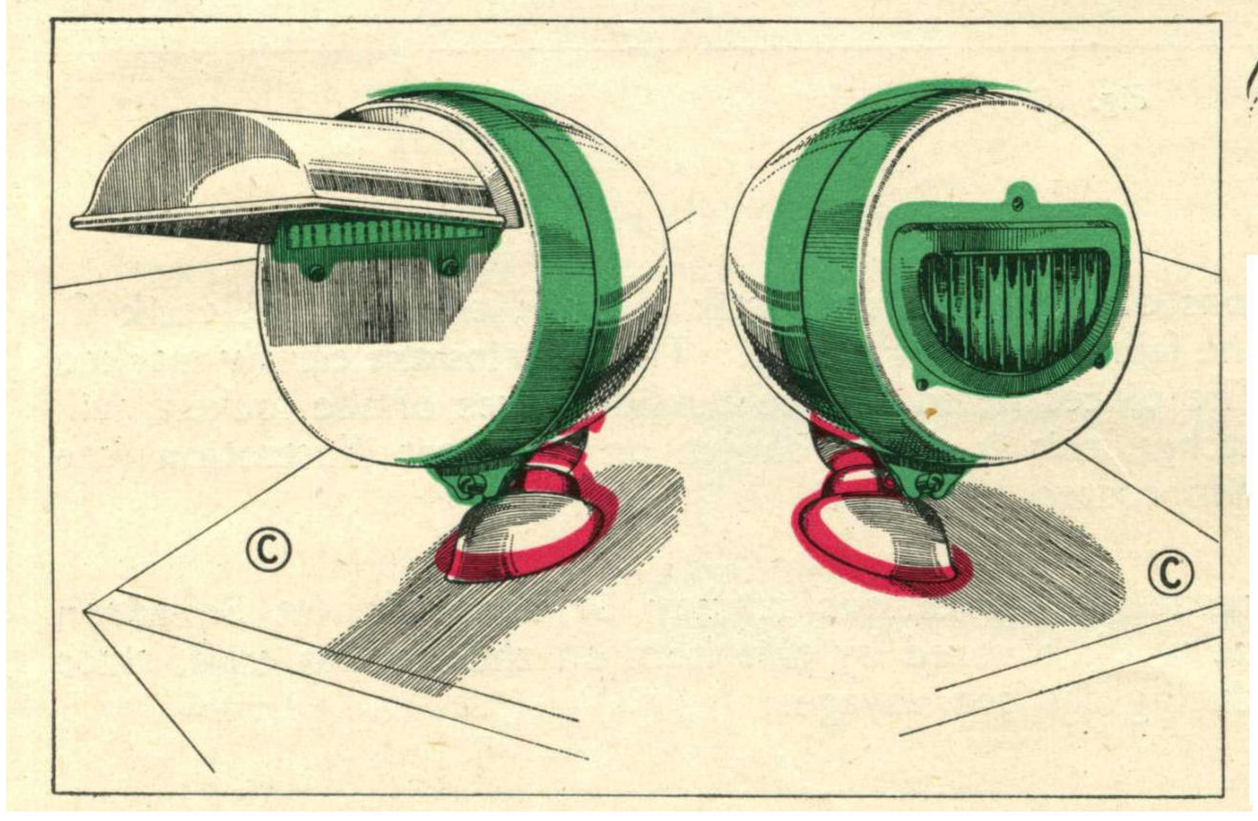


Fig. 13

49. The head lamp mounting brackets to be sealed with Bostik AA. where they fit to front plate (C) (see Fig. 13). and the head lamp seating washers are also sealed to the mounting brackets with Bostik AA. Using A.C., seal the joint between lamp glasses and fronts and also seal with A.C. the lamp fronts on to the lamp bodies, taking care to apply plenty of compound around the front retaining screws.

50. The side lamp stems (see Fig. 14) (where they protrude below the lamp brackets) to be plugged up with Bostik 692, finally painted over with Bostik AA., including the side lamp seating washers. Using A.C., seal up the joints between lamp glass and front rim and between front rim and lamp body, taking care to apply plenty of compound around the front retaining screws.

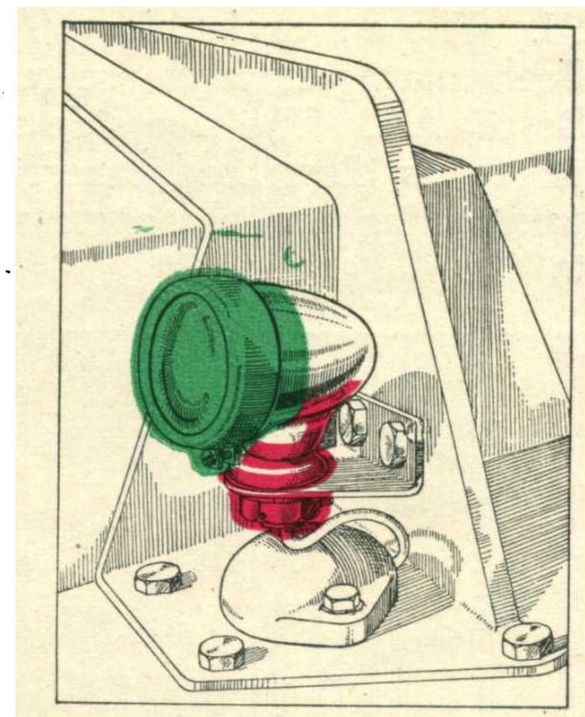


Fig. 14

51. Rubbolite tail lamps (see Fig. 15) are sealed by binding the whole of the lamp body from the fixing bracket up to the red window with insulating tape. Similarly, bind the cable adapter from immediately behind the bracket and along the cables to the rear cowl angle plate ; when binding, make half-lap joints. Then paint over all the binding and the red window with two heavy coats of Bostik AA., leaving a $\frac{1}{8}$ in. dia. hole for the light to show through.

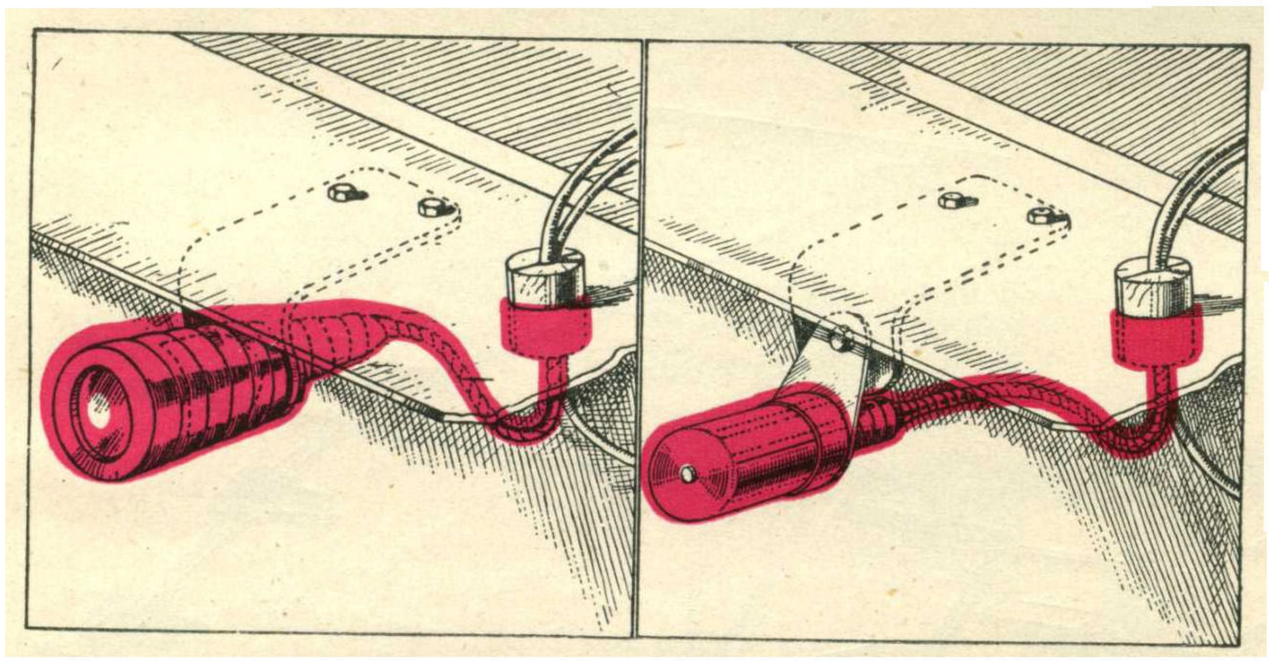


Fig. 15

In the case of metal tail lamps the treatment is as above, except that the binding over the lamp body is not necessary.

52. With the smoke candles fitted in their boxes, apply Lanoline around the candle caps where the wires leave the candles. Couple up the candle wires to the smoke generator junction boxes. Before replacing the junction box lids, completely fill them with Lanoline.

53. **On completion of all work specified in items 8 to 52 inclusive, carefully inspect; this is of great importance.**

54. **Fresh-water test.** After allowing sufficient time for all the sealing to thoroughly set, the vehicle is to be driven into THREE AND A HALF FEET OF FRESH WATER. It should be emphasised that the choice of a suitable place of immersion will require considerable care. Avoid, if possible, steep approaches and mud bottoms. The site should be thoroughly investigated before a vehicle is immersed. If the approach to the available water is at all steep it will be necessary to seal the driver's front look-out and the turret ring as described in Tasks 58, 66 and 80. Paint or chalk a line on the vehicle $3\frac{1}{2}$ feet from the ground, and then drive the vehicle into the water as slowly as possible until the water reaches this mark. This is to avoid water getting into the top of the rear cowl, since this opening will only be a few inches above the water level. The duration of this fresh-water test is ten minutes. Whilst the vehicle is in the water inspect carefully for leaks ; there should not be any, but if any are found, remove the vehicle from the water immediately, dry off and rectify any defective sealing. The vehicle should then be immersed again for further inspection. This procedure should be repeated, if necessary, until the vehicle will stand for the specified time without leaking.

During this test and subsequent stages care must be taken not to disturb any of the sealing, particularly that accomplished with A.C. After this test the driver will no doubt wish to use his look-out prior to embarkation, in which case the sealing of this item will have to be re-made prior to embarkation, or on the landing craft as conditions demand.

On the completion of the fresh-water test drain off the oil in the final drives and replenish.

If any redundant holes are found they MUST be sealed as called for at Task 2.

55. The air outlet duct (A) (Fig. 16) is then erected on the rear cowl (already fitted at Task 43). Both mating surfaces are to be coated with Bostik 692. The duct fixing bolts are to be sealed with Bostik AA. The two side support tubes are bolted in position between duct and cowl side support plates, as illustrated, inserting packing pieces between the tube ends and the mating parts. Finally paint all around the angle sections and their joints on the duct and cowl with Bostik AA. as shown in the illustration.

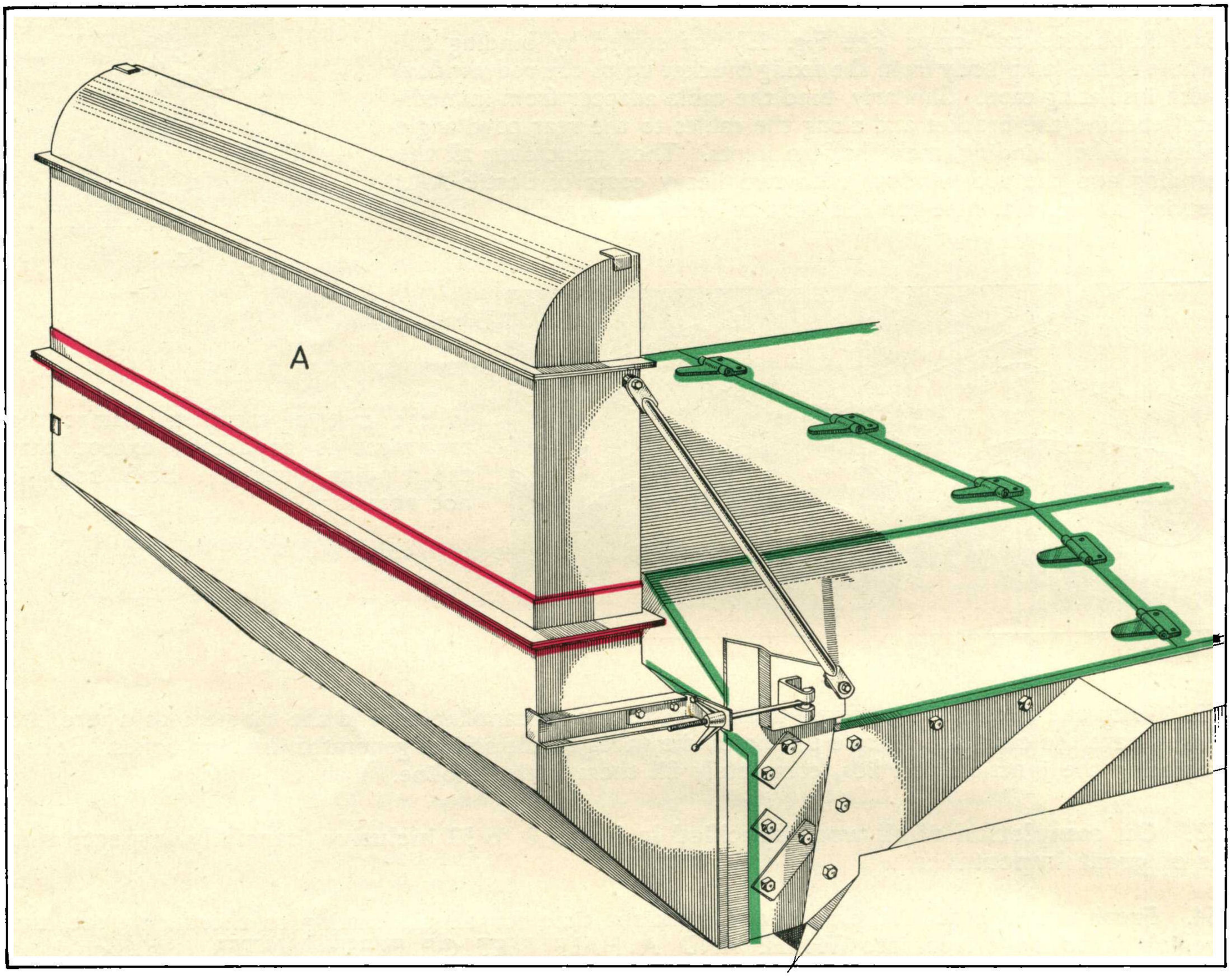


Fig. 16

56. **Gun Mantlet Aperture (Fig. 17).** This is blanked off with a fabric patch (Kit C). Elevate the guns and offer up the fabric to the front of the turret, arranging it lengthwise across the gun aperture. Mark the area of the mating surfaces and clean this portion of the turret front with Bostik cleaner. Apply Bostik C. to the turret and to the fabric, then fix the patch in position. With the patch fixed, a certain amount of gun depression is available. If, however, the guns are further depressed, for any reason, the fabric patch will be damaged. This must be repaired and in good order before wading is attempted.

57. The ignition coils are shrouded by covering with the fabric patch provided, secured in position using Bostik C. as an adhesive.

58. Lock the turret with the gun at 12 o'clock. The turret ring is to be sealed with a heavy fillet of A.C. built up between the hull and the outside surface of the top ring, see Fig. 17. Before applying the A.C. the bottom $1\frac{1}{2}$ in. of the outside surface of the top ring is to be coated with Bostik C. This will ensure that the A.C. adheres to the top ring in the event of the turret being subsequently moved. **Rapid re-sealing of the turret ring is thus facilitated by re-feathering the A.C. to the hull. This seal must be in good order before wading.**

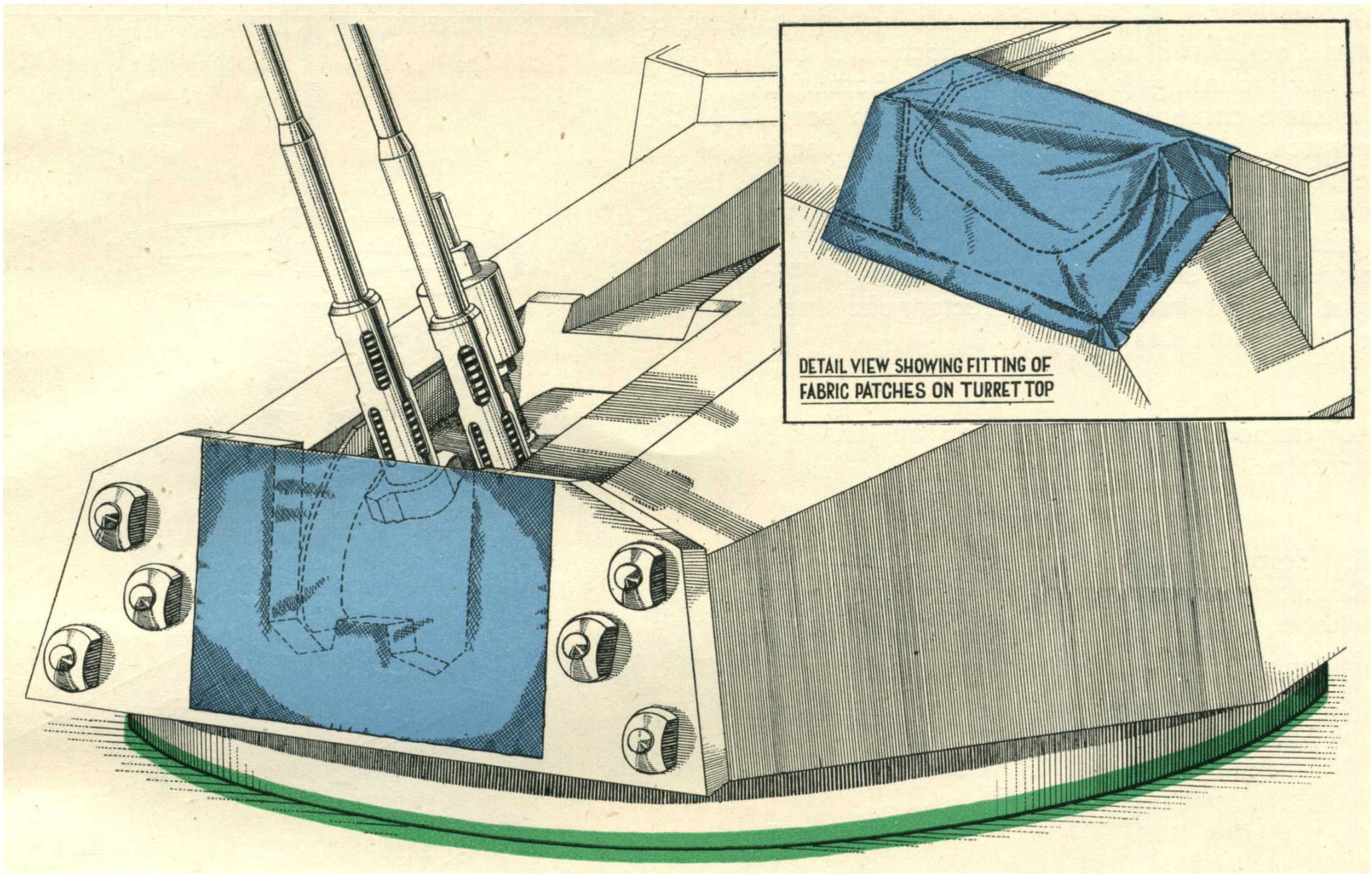


Fig. 17

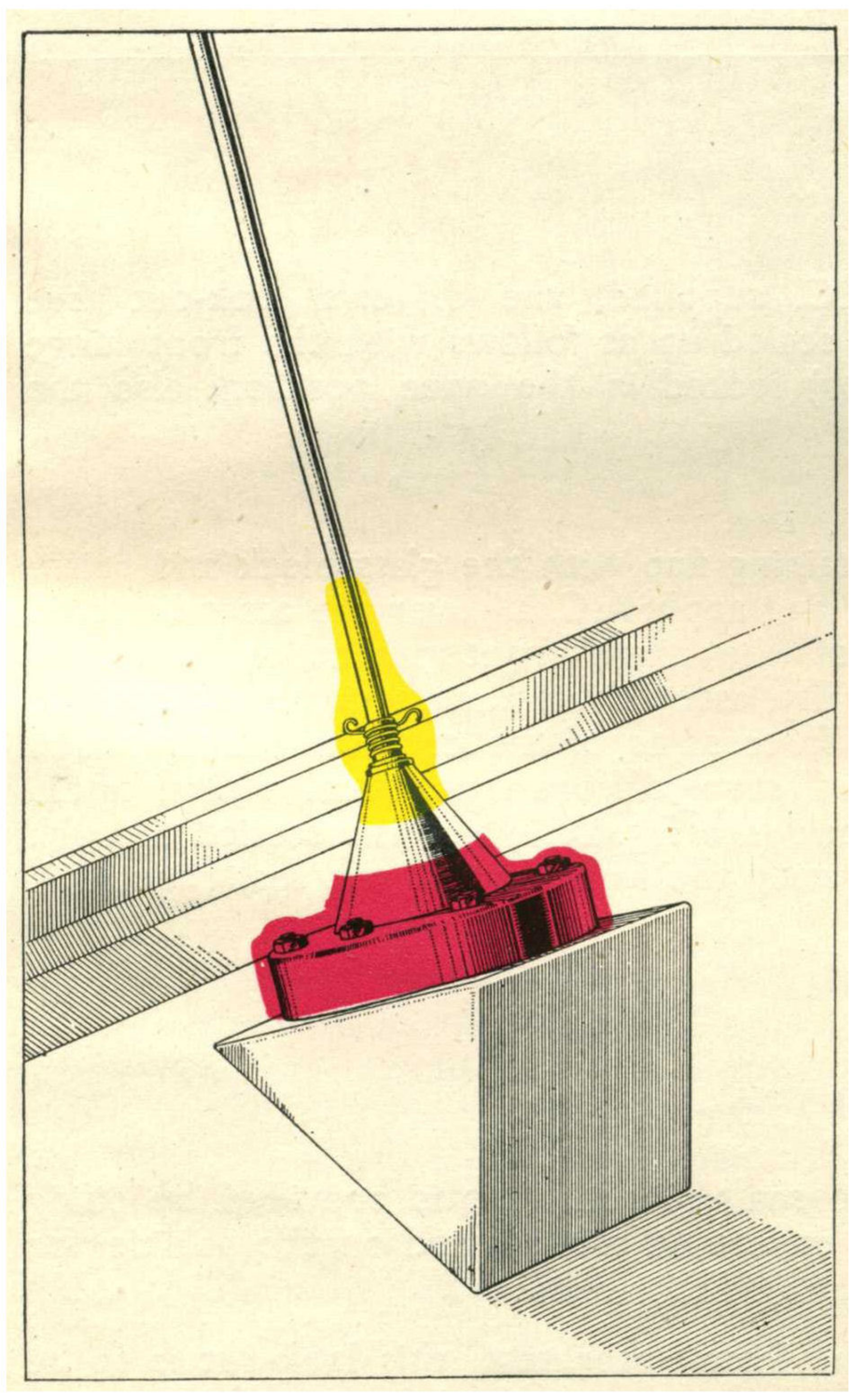


Fig. 18

WIRELESS.

59. The set must be netted and the variometer tuned and control units tested before sealing work is commenced. **Switch off.**

60. **"A" Set Aerial.** The base of the aerial mounting and its fixing bolts are sealed on to the mounting bracket with Bostik AA., see illustration Fig. 18. With the aerial rod in position, the bottom of the rod and the top of the mounting are well coated with G.S. grease as illustrated.

61. **Control units** are sealed with the fabric patches provided in Kit C. Release each unit from its mounting and place it square in the centre of the fabric. Using the unit as a template, mark off the securing holes and pierce the fabric. Smear around the holes in the fabric on both sides with Bostik C. and bolt the unit back into place on top of the fabric. Fold the fabric neatly over the front of the unit, left to right, right to left, bottom to top, top to bottom. As each fold is layered over, tack in position with Bostik C.

62. **Headsets.** Cover the terminals on each headset with A.C.

Microphones, commander and gunner. Place each microphone inside bag W.P. Signal No. 1 and secure the mouth tightly around the cable with the tapes provided. Microphones will function with the bag fitted but it is necessary to speak louder than normally.

63. **"B" Set Aerial.** Paint the bottom two inches of the aerial rod and the top portion of the serrated rubber mounting (see Fig. 19) with Bostik AA. With the same compound paint the bottom portion of the serrated rubber mounting and the top portion of the aerial mounting. The bottom portion of the aerial mounting and its rectangular base and fixing bolt heads are also to be painted with Bostik AA., in this instance the sealing compound must well cover the joint formed between the rectangular base and the aerial support bracket.

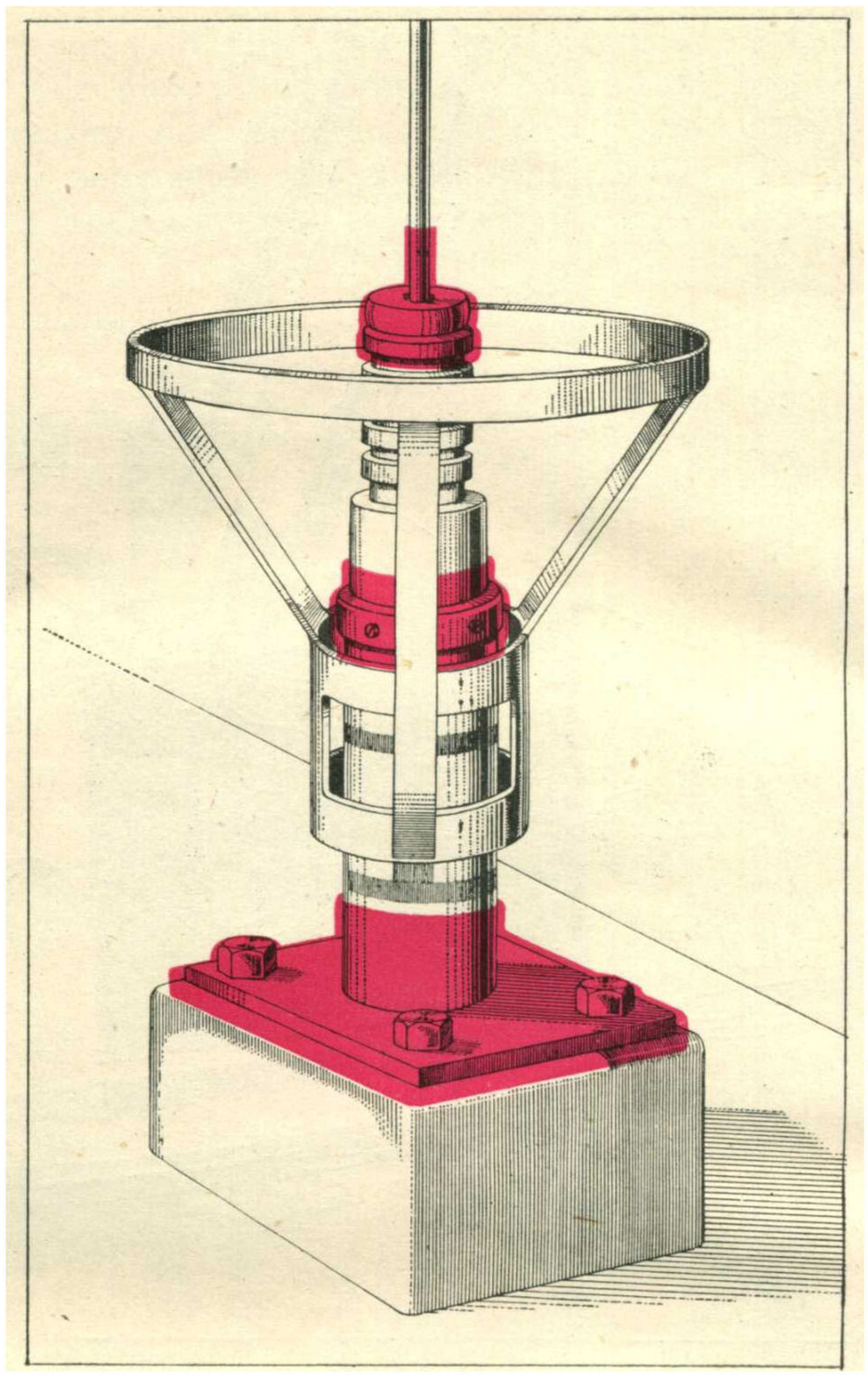


Fig. 19

64. **Inspect work called for at Tasks 59 to 63 inclusive.**

65. Test the wireless set and control units for efficient functioning. The set and control unit switches can be operated beneath the fabric covers. Remember that the control unit operation is :—

Switch to	LEFT	"B" Set	operates.
„	„ CENTRE	I.C.	„
„	„ RIGHT	"A" Set	„

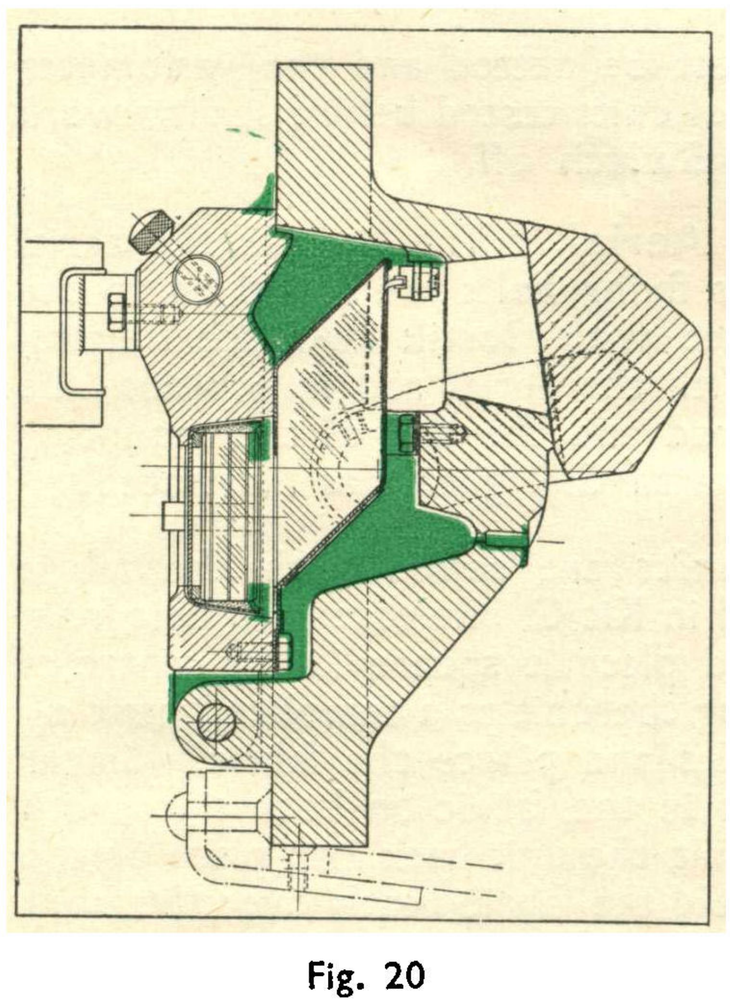


Fig. 20

66. Using the A.C. supplied, the driver's look-out (see Figs. 20 and 22) is sealed up as follows with the front hinge plate (driver's visor) locked in the open position, also the bullet-proof shield.

Lower the back retaining flap with the glass block and prism clipped in position, and apply A.C. all over the assembly, also into the cavities of the hinge front protection plate, as shown. The back flap assembly is then securely shut up in position ; this will force some of the compound out around the joints. Wipe off surplus from the **actual vision apertures,** front and back (see Fig. 20, which is a section through the look-out, illustrating the formation of the seal required).

67. **Take all your remaining sealing materials with you.**

68. The tracks will need protection during a protracted sea voyage. This is provided by oiling the tracks ; a used petrol tin must be filled with waste engine oil and stowed on the vehicle for the purpose.

If the driver's front look-out has been sealed prior to the fresh-water test, this look-out is to be reopened for the purpose of driving the vehicle to the point of embarkation.

69. Check fuel and oil, replenish if necessary, using an external filter for the fuel. Take great care not to spill any fuel or oil, as these fluids will destroy sealing. Smear the threads of the filler caps with G.S. grease before replacing.

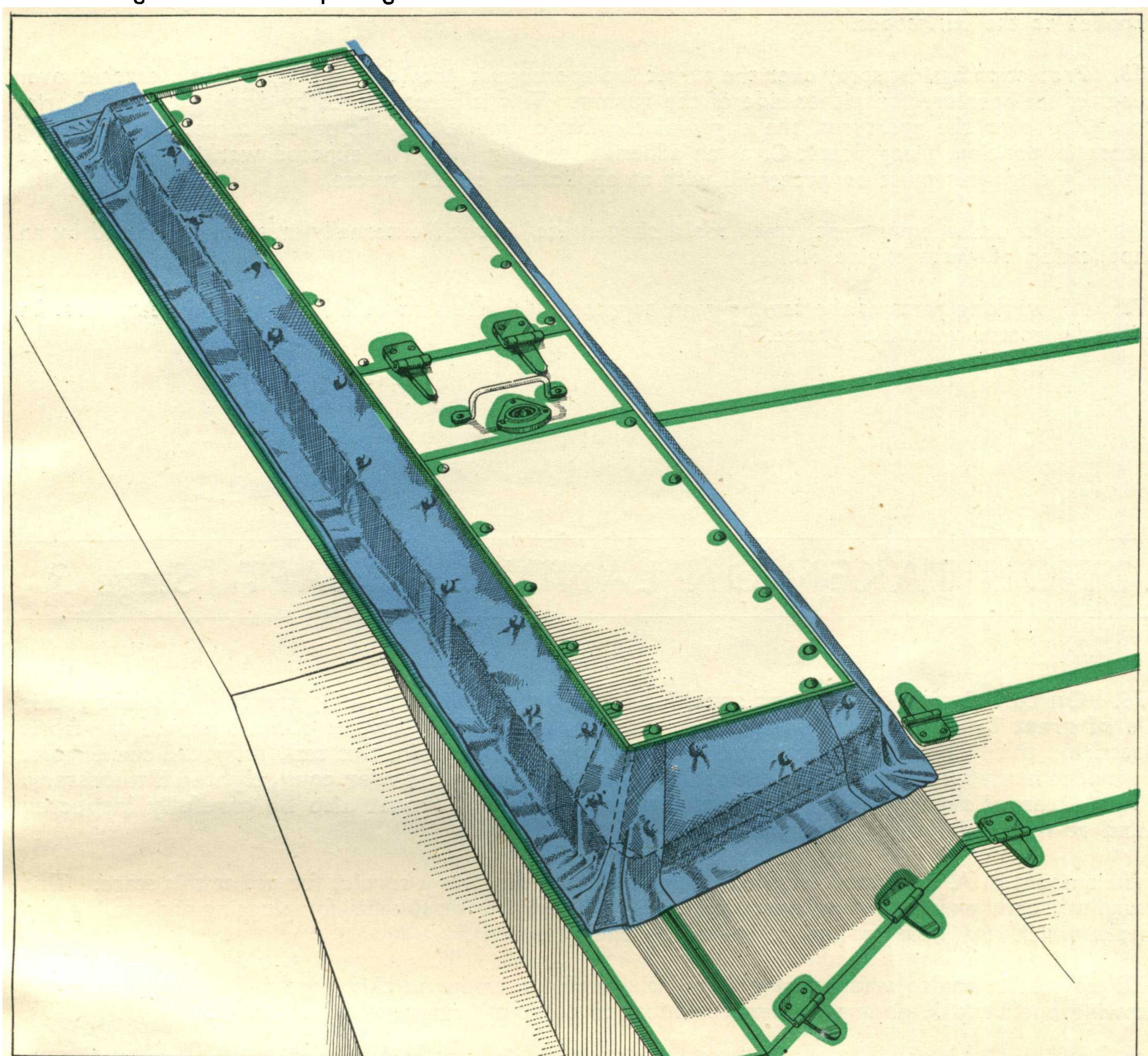


Fig. 21

70. **Air intakes over radiators (Fig. 21).** After cleaning with Bostik cleaner the sloping edges of the cowls and corresponding surfaces on the top of the engine compartment, the fabric strips provided in Kit C are fitted, using Bostik C. as an adhesive. Finally the joints in the fabric are painted over with Bostik AA. Great care must be taken when applying the fabric that the fuel filler doors, on top of the cowls, are free to open. **Any running of engine or vehicle after this sealing is made up to leaving the craft must only be done with the fuel filler doors wide open. To compensate for loss of air caused BY BLANKING OFF INTAKES, THE TWO CENTRE BULKHEAD PLATES ARE REMOVED AND THE TWO OUTSIDE ONES OPENED.**

71. The rear inspection flaps and joints in the engine compartment roof plating are sealed with A.C. All ledges on to which flaps shut are to have a fillet of A.C. applied. Close flaps, making sure

that they are bedded well down and their catches securely fastened. Push the handles well down on to the plating and apply further compound to all bolt heads and hinges, see Fig. 16. The joints in the roof plating are to be thoroughly sealed with a generous application of A.C.

72. Swing open periscopes and remove top prisms ; clean the prism casings and their housings. The prism casings are then lightly smeared with G.S. grease and replaced. Final sealing of the periscopes is achieved by using Lanoline applied liberally around the outside and inside joints, taking great care to see that none is smeared on the prisms. At this stage, anti-dim should also be applied to the periscopes.

73. Protection against spray over the turret top aperture is provided by fitting fabric patches over each of the apertures on either side of the gunner. This is accomplished by draping the two fabrics provided over the apertures, the edges of the fabric (where they fit on the turret plating) being stuck in position, using Bostik C. as an adhesive, see Fig. 17. The exposed working joints of the gun sighting gear must be protected with an application of G.S. grease.

74. Any tools or equipment (track tools, shovel, etc.) stowed externally must be protected by an application of waste engine oil.

75. All working parts of the towing gear, together with the shackle loops front and rear, must be liberally coated with G.S. grease.

ACTION TAKEN ON LANDING CRAFT *Stage 3*

76. **On completion of all work specified in items 8 to 75 inclusive, carefully inspect ; this is of great importance.** Pay particular attention to the hull bottom plates ; should the fabric patch on the hull drain flap be found damaged, repair or re-make this seal, using the spare fabric provided in the kit. **Check also the six wing nuts retaining the rear cowl, tighten if necessary. The external sealing of the cowl joints made with A.C. must also be carefully inspected and re-made if found damaged.**

The amount of A.C. allotted for the sealing of the vehicle gives a surplus for use at this stage. This surplus, together with cotton waste, makes a " First-Aid " kit suitable for plugging and sealing any leaks which may develop (or are caused by enemy action).

77. If vehicle has to wade towing a trailer, couple up trailer at this stage and securely wire the towing hook trip lever in the closed position, to prevent accidental loss of trailer.

78. Sheet the vehicle over during transit to minimise the ill effects of salt water and spray.

79. The tracks must be smeared with the waste engine oil brought for this purpose.

This must be done daily if the voyage is protracted.

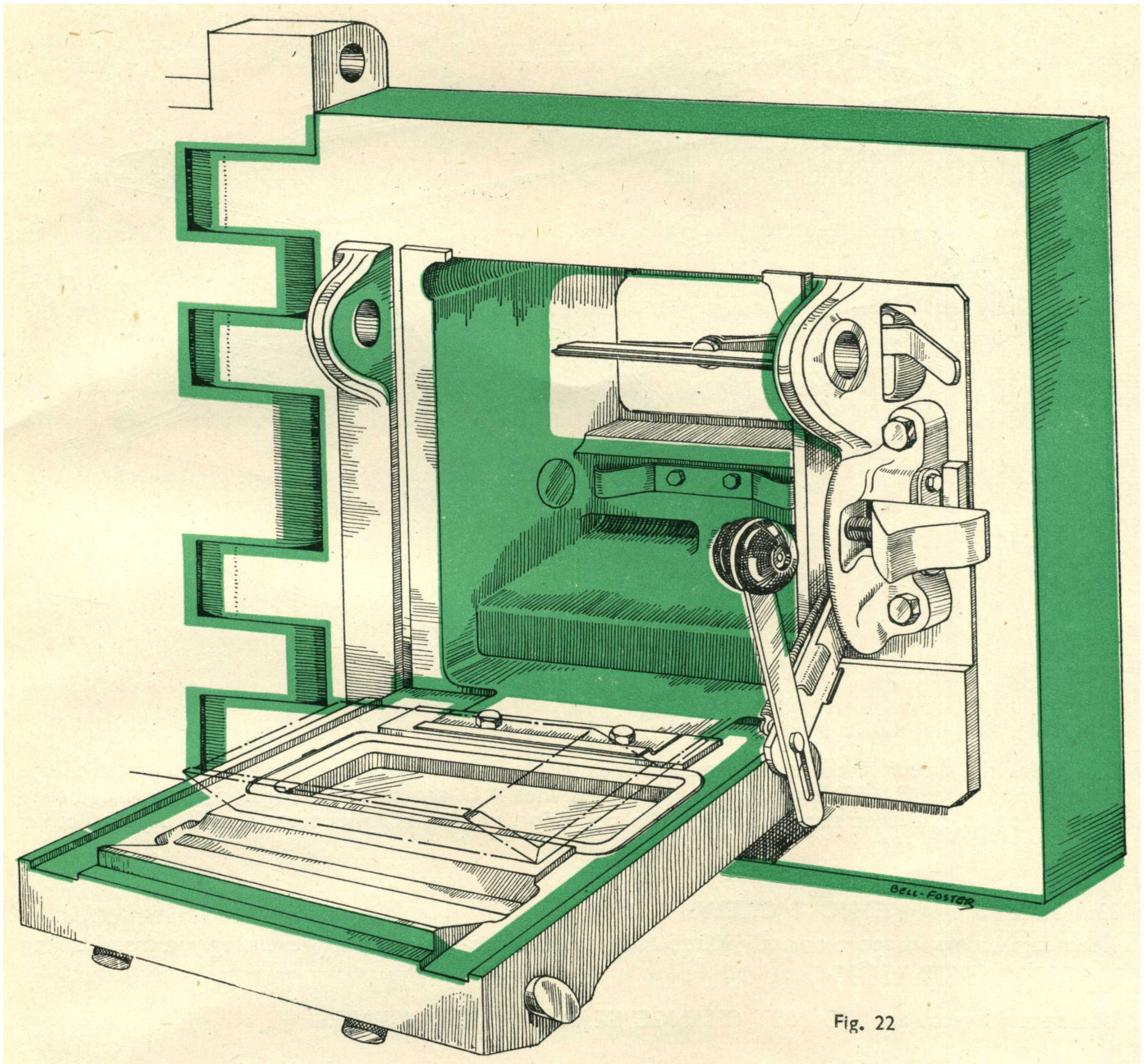


Fig. 22

80. The front hinge plate (driver's look-out) (see Fig. 22), already partially sealed (see item 66, Fig. 20), whilst still open, to have its outer edge **heavily** coated with A.C. together with the ledge on to which it shuts on the driver's hood. The plate is then slammed shut, and any apertures along the edges which may require it to have additional A.C. applied. The hinge to be heavily coated with A.C. ; stuff A.C. well into the apertures formed by the two halves around the hinge pin and also cover the catch on top plate (D).

If sealing specified in items 58, 66 and 80 had to be done in order to test in fresh water, item 54, you have now only to check up this sealing and touch up as necessary.

81. The fuel filler flaps, which up to this task have been left wide open, are now to be shut **but not locked,** and sealed with a liberal application of A.C. These flaps are not locked, in case it is necessary to provide cooling air to the engine before it is possible to rip off the fabric sealing on the air intakes as called for at Task 84.

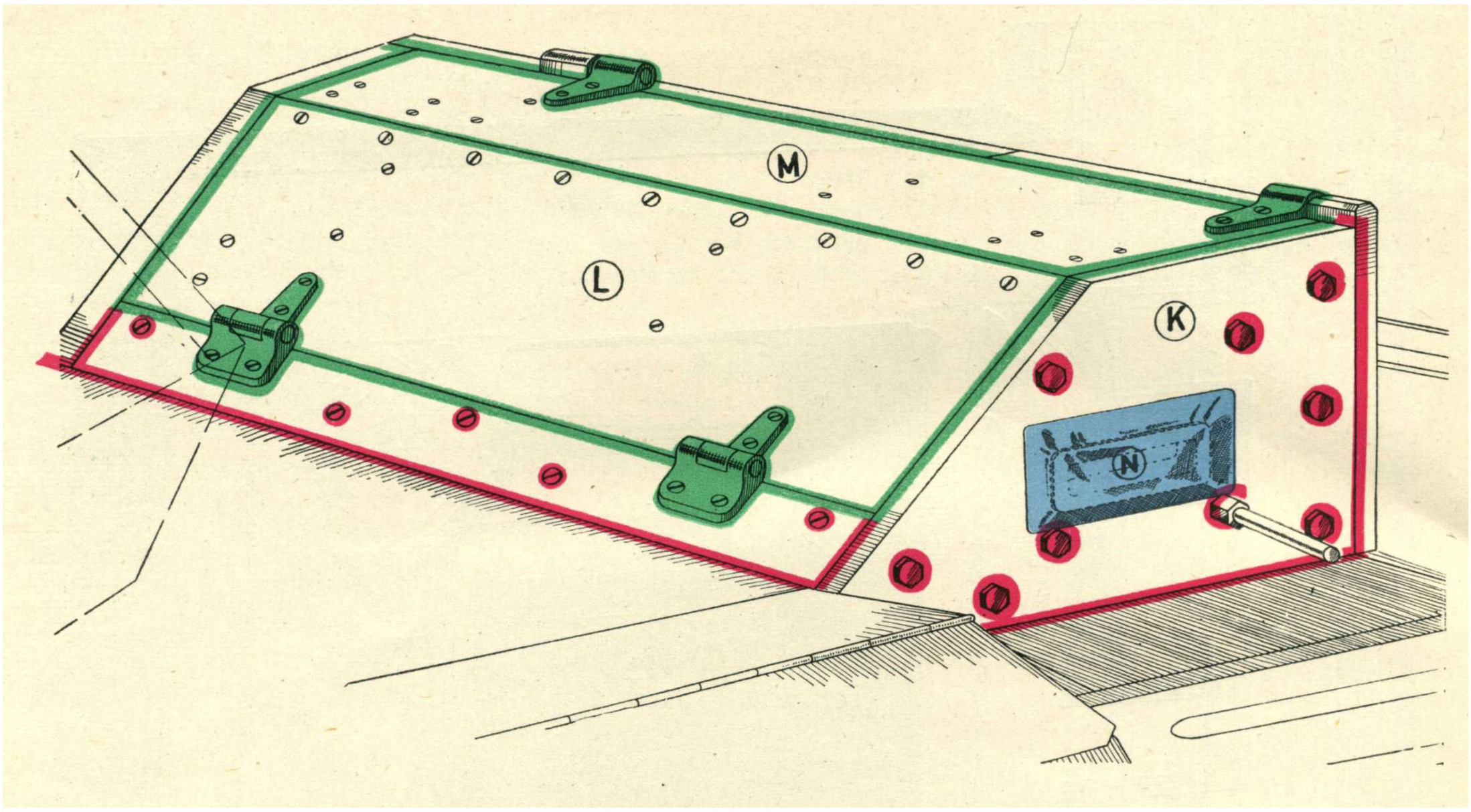


Fig. 23

82. With the driver in the vehicle ready for driving off down the ramp, the two top plates of the driver's hood (see Fig. 23) are then heavily coated with A.C. around their edges, also the ledge they fit down on to, and then slammed shut. **Do not wipe off any surplus compound.** Apply further A.C. over the hinges.

83. HINTS TO VEHICLE CREW.

Keep engine revs. at approximately 900 to 1000 r.p.m. This will assist in preventing you from stalling the engine during wading.

Use **second** gear, and DO NOT CHANGE GEAR WHILST WADING.

Ease the vehicle down the ramp.

Keep engine revs. up and keep going.

On the vehicle taking the water, Commanders MUST remember that drivers temporarily will not be able to see.

Don't attempt to make " tight " skid turns when on beach or in the water, otherwise the vehicle may stall.

Don't park with brakes on after wading ; scotch the vehicle.

Don't park for more than twenty-four hours without moving the vehicle.

ACTION TAKEN AT EARLIEST POSSIBLE MOMENT AFTER LANDING *Stage 4*

84. **Rip off the fabric sealing on the air intakes ; this is most important.**

85. Remove the rear cowl and air outlet duct by loosening the six nuts on the tee bolts holding the cowl ; this component can be removed and discarded. It should be noted that the side and bottom angle plates for the cowl fitted as instructed at items 30, 31 and 32 are to be left in position.

86. Discard fabric covers from air cleaners, also splash cowls and support brackets from air intake pipes. Refit air intake pipes to air cleaners.

87. Remove fabric patches from gun aperture and turret top.

88. Run vehicle on beach (if practicable) to check over operation of controls, brakes, etc.

MAINTENANCE AFTER LANDING *Stage 5*

89. **Drain off oil from final drives and replenish with fresh oil. The vehicle must not run for more than 150 miles after landing before this work is done.**

90. Remove fabric from turret and from ignition coils and wireless control units.

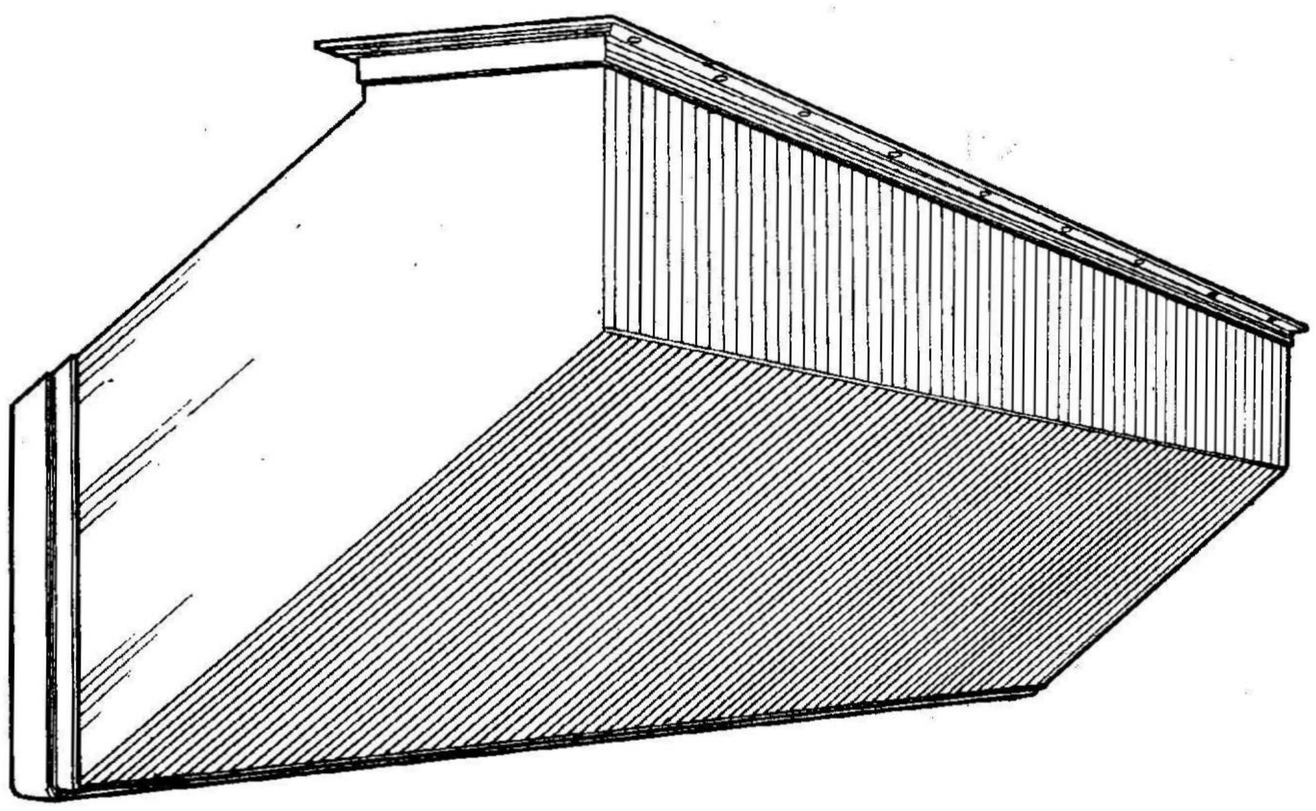
91. Clean off all sealing material from inspection covers, flaps, drain plugs and hull drain valves, etc., on hull bottom plates, taking care to remove all traces of sealing material from cooling system drain.

92. Remove all G.S. grease, A.C. and Lanoline which has been used for sealing purposes.

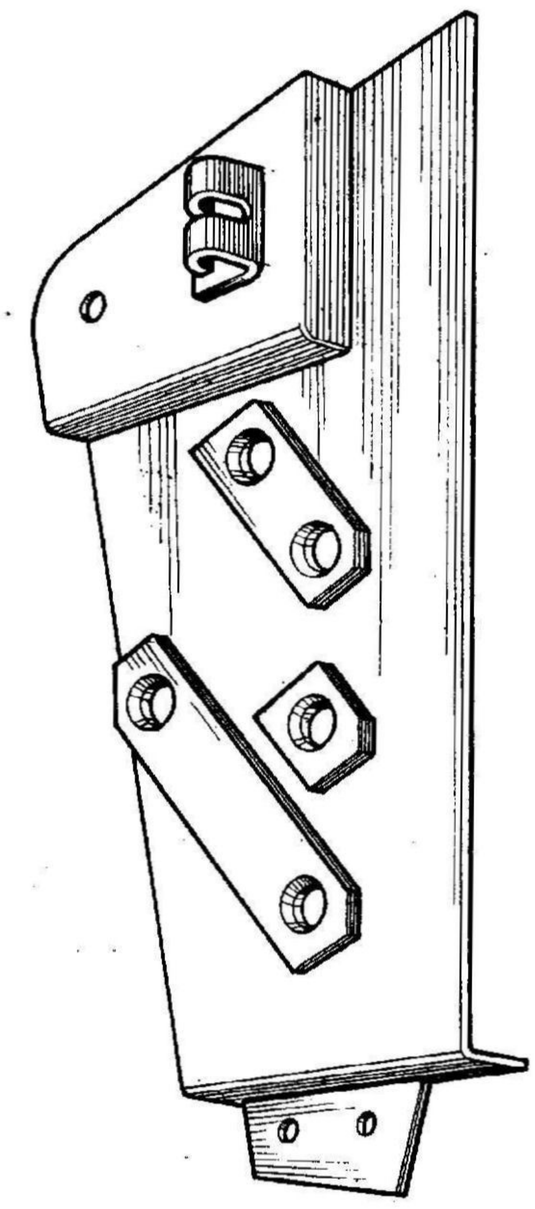
93. Lubricate vehicle all round **again,** as previously instructed at " MAINTENANCE BEFORE SEALING," item 3.

94. Refit trailer towing hook control.

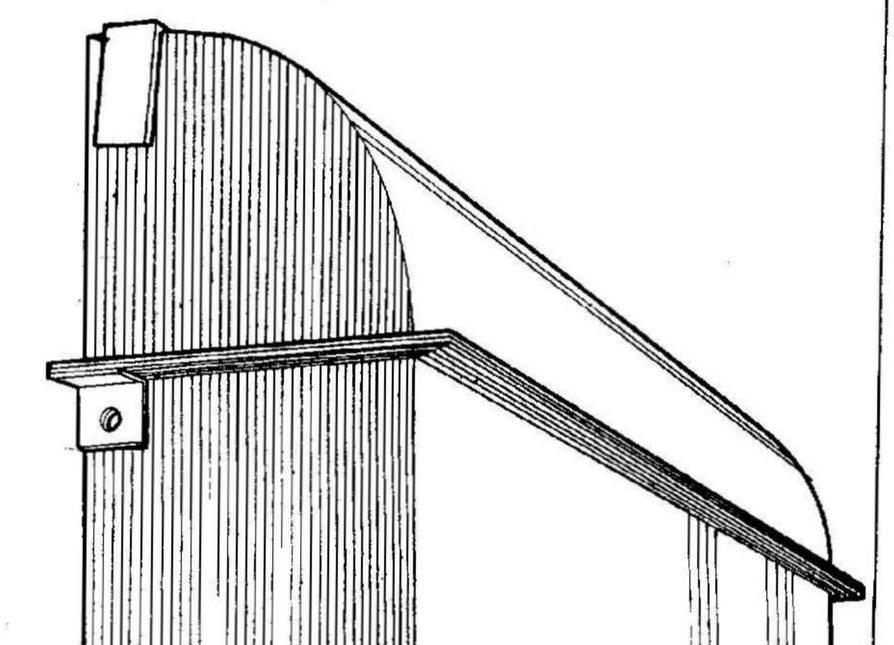
95. Refit the fire extinguishers and their brackets which were removed at Task 7.



U.S. 374.B.



M.C. 10183 B. R.H.
M.C. 10184 B. L.H.



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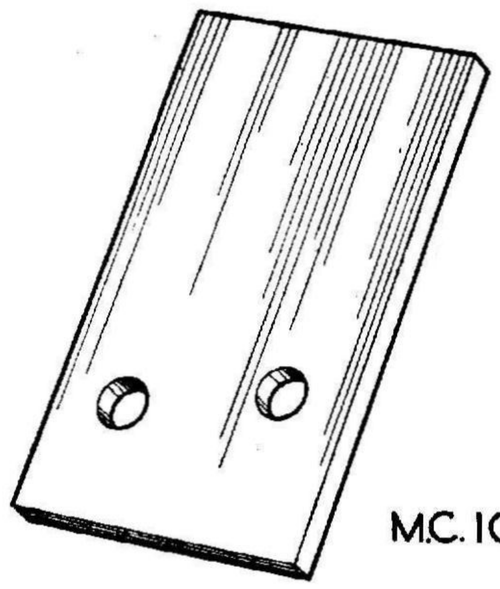

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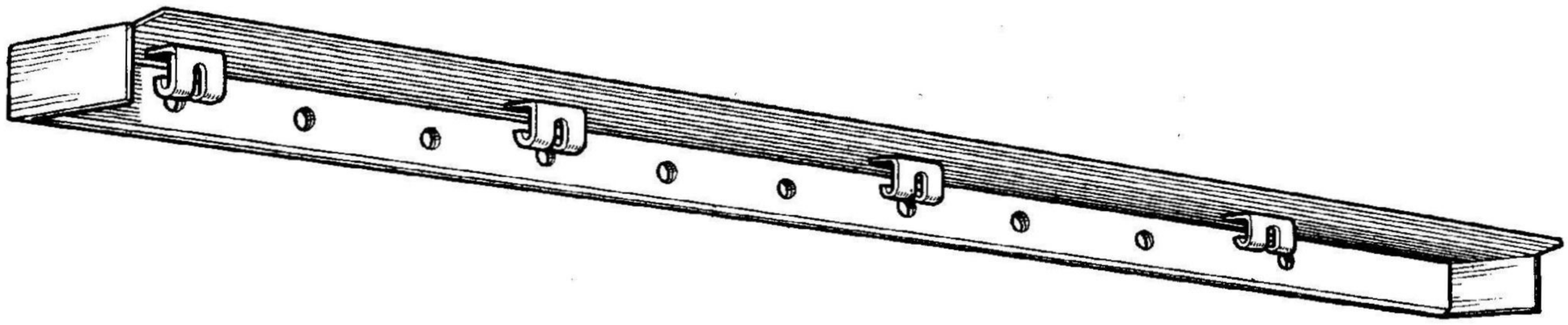
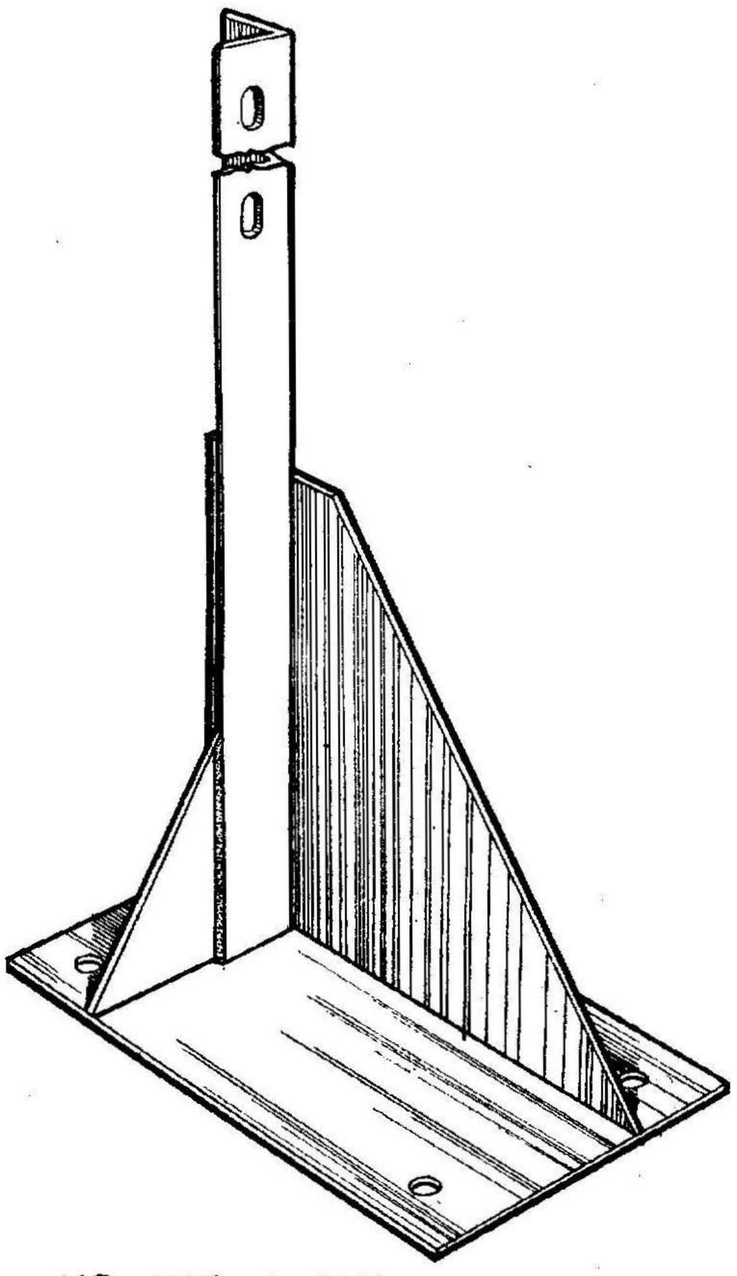


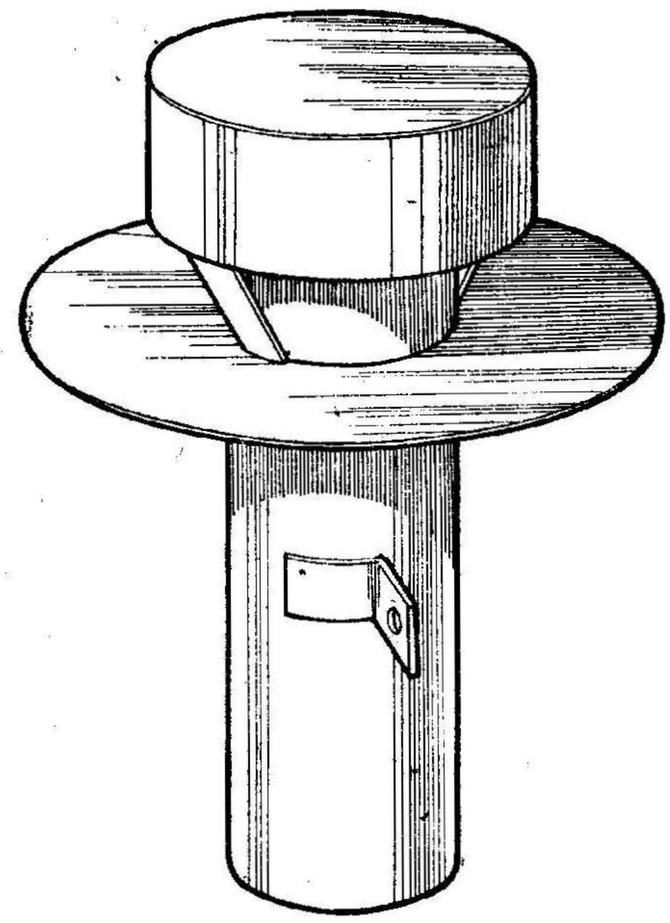
M.C. 10178.

Fig. 24

U.S.401. A. L.H.

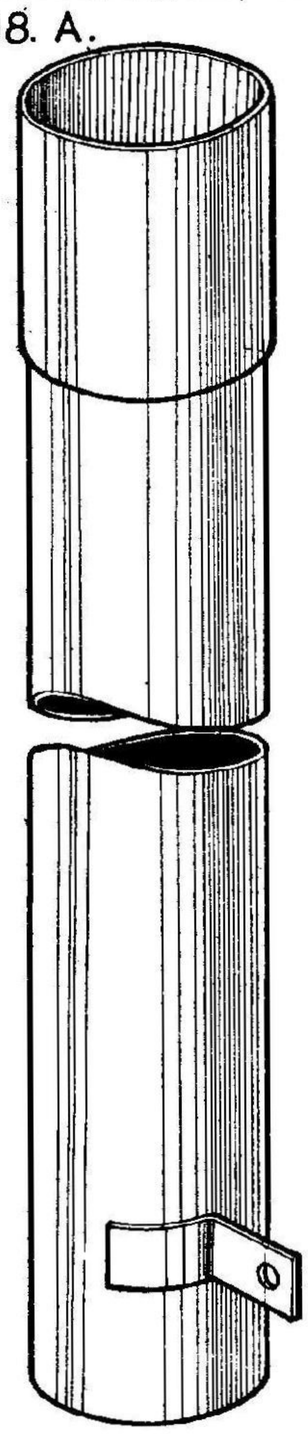


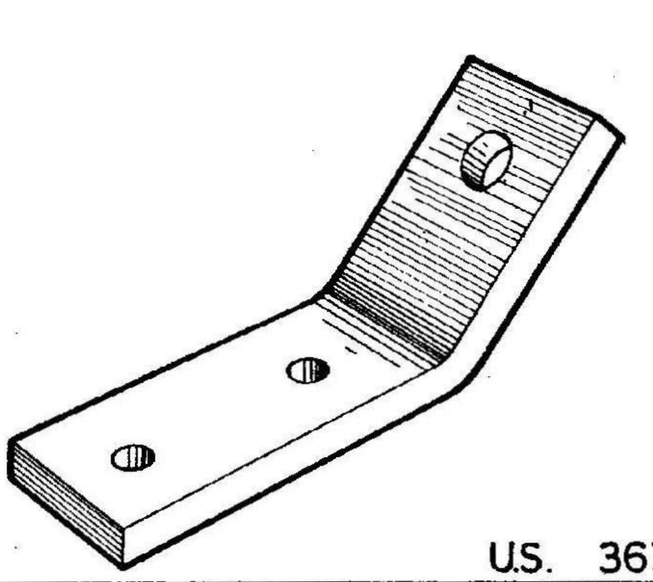
U.S 402. A R.H.



M.C.10215.

US. 398. A.





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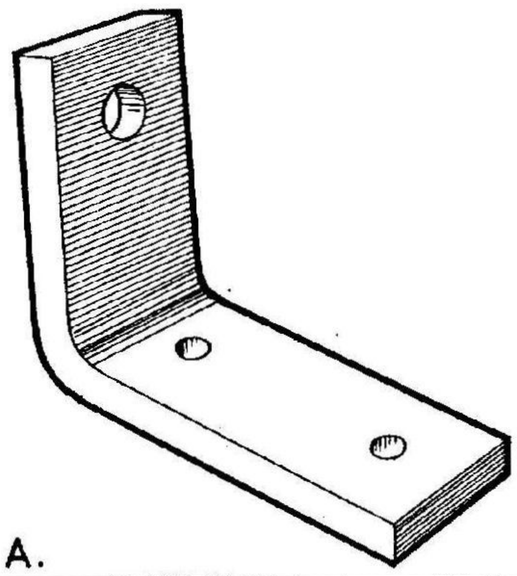

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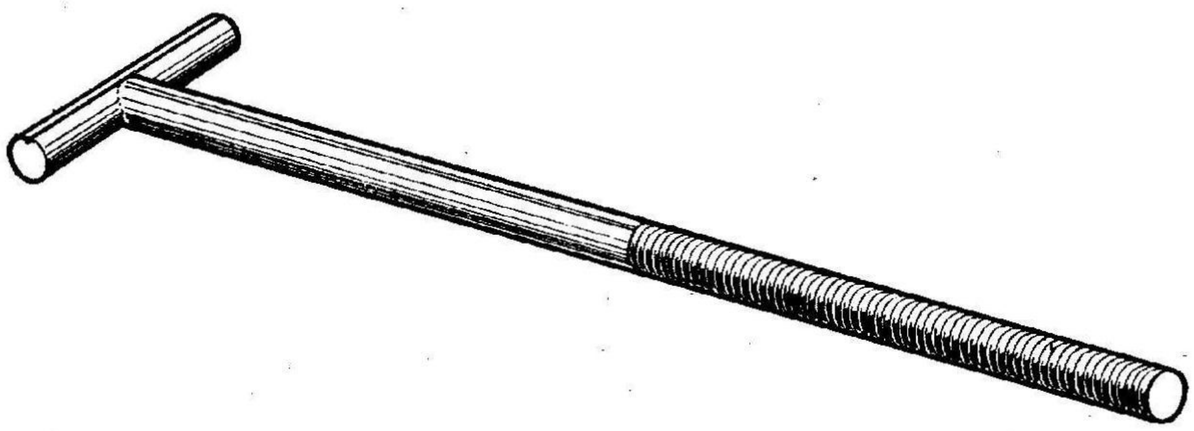

MC. 10210.

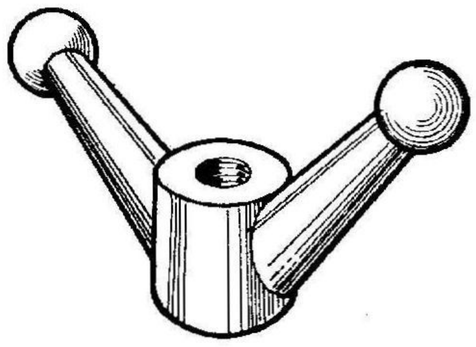

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Fig. 25

TASK CARD

Page No.	Task No.	ITEM	Initial Completed
		STAGE 1	
		Hull Bottom	
10	8	Seal outside edges, front, side, rear	
10	9	Seal seams in centre of floor plate between two halves of plating	
10	10	Seal all bolt and rivet heads	
10	11	Seal screwed plugs	
10	12	Seal bolted-on inspection covers	
10	13	Seal cooling system drain hole	
10	14	Seal L.H. petrol tank drain hole	
10	15	Seal hull drain valve and drain flap	
10	16	Inspection of hull bottom	
		Front of Vehicle	
12	17	Seal bottom slant plate, joints, rivets and screw heads	
12	18	Seal front plate, joints and bolt heads	
12	19	Seal towing loop brackets, joints and bolt heads	
12	20	Seal top slant plate, joints and screw heads...	
12	21	Seal sling brackets, joints and bolt heads	
12	22	Seal track adjusting caps	
12	23	Seal three top plates, joints, screw and bolt heads	
12	24	Plug gutter drain hole, seal front stowage compartment doors	
12	25	Seal driver's hood plates and cover for front revolver port	
12	26	Seal driver's R.H. look-out	
12	27	Seal edges of additional armour	
12	28	**Rear of Vehicle (Cowl)** Remove or disconnect fittings, bolts, etc., from rear of vehicle	
14	29	Remove two bolts and replace with screws (top louvre plate)	
14	30	Fit cowl bottom angle plate	
14	31	Fit L.H. cowl side plate	
14	32	Fit R.H. cowl side plate	
16	33	Refit towing hook bracket complete	
16	34	Refit tail lamps and brackets	
16	35	Refit smoke generator junction boxes...	
16	36	Refit smoke generator boxes	
16	37	Connect up and seal tail lamp and smoke generator cables (via holes in cowl bottom angle plate)	
16	38	Fit rear cowl (dry), complete joints between cowl side and bottom angle plates. Remove cowl	
		Rear of Vehicle (Rear Plates)	
17	39	Seal rear bottom slant plate, joints, bolt heads, convoy lamp	
17	40	Seal rear main plate and towing loop brackets, joints and bolt heads	
17	41	Seal rear louvre and cowl side plates, joints and bolt heads	
17	42	Fit sealing strip, rear edge top louvre plate...	
17	43	Refit rear cowl and seal	
17	44	Modify air intakes to carburetters, seal joints, fit W.P. covers to air cleaners	
18	45	Grease up air cleaner sliding trays, seal bottoms of W.P. covers to air cleaners	

TASK CARD

Page No.	Task No.	ITEM	Initial Completed
		Lockers on Trackguards	
18	46	Seal lockers internally and externally	
		Lamps, Head, Side and Tail—Smoke Generators	
19	47	Test light and smoke generator wiring	
19	48	Seal head and side lamp conduit	
19	49	Seal head lamps	
20	50	Seal side lamps	
20	51	Seal tail lamps	
20	52	Seal smoke candle caps and junction boxes	
20	53	Inspection of Tasks 8 to 52 inclusive	
20	54	Fresh-water test	
21	55	Erect and seal air outlet duct	
21	56	Blank off gun mantlet aperture	
21	57	Shrouding ignition coils	
21	58	Seal turret ring	
		Wireless	
22	59	Net wireless set, tune variometer, test control unit	
22	60	Seal "A" set aerial	
22	61	Seal control units	
22	62	Protect headset terminals, fit W.P. bag to microphones	
23	63	Seal "B" set aerial	
23	64	Inspection of tasks 59 to 63 inclusive	
23	65	Test wireless set and control units	
23	66	Seal driver's front look-out (back flap)	
23	67	Stow all remaining sealing materials on vehicle	
23	68	Stow tin of waste engine oil on vehicle and open driver's look-out	
		STAGE 2	
24	69	Check fuel and oil, grease filler cap threads	
24	70	Blank off radiator air intakes, provide alternative air inlets as instructed	
24	71	Seal rear inspection flaps and joints in engine compartment roof plating	
25	72	Seal periscopes	
25	73	Fit fabric to turret top apertures	
25	74	Protect external equipment	
25	75	Protect towing gear and shackle loops	
		STAGE 3	
25	76	Inspection of Tasks 8 to 75 inclusive	
25	77	Couple up trailer	
25	78	Sheet vehicle over...	
25	79	Protect tracks	
26	80	Close and seal driver's look-out	
26	81	Seal fuel filler doors	
27	82	Seal driver's hood...	
27	83	Hints to vehicle crew	